

**REPORTABLE  
INFECTIOUS DISEASES  
IN  
KANSAS**

**1999 SUMMARY**



August, 2000

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## INTRODUCTION

### Purpose and format of this report

This is the eighth annual summary of reportable diseases by the Kansas Department of Health and Environment (KDHE). The purpose of the report is to provide useful information on notifiable infectious diseases in Kansas for health care providers, public health workers and policy makers.

The report is divided into two sections. Section I presents summaries of 39 reportable diseases or conditions of public health importance in Kansas. Each of the diseases or conditions is presented with a brief overview of the disease, laboratory tests commonly used for diagnostics, and the surveillance case definition. A summary of the disease in Kansas including key statistics and trends is supplemented by tables and graphs. Only confirmed cases are presented in the report as reported by March 9, 2000. Rates have been calculated from 1999 census estimates for age, sex, county and total population, and 1998 census estimates for race and ethnicity (the most recent available data) to adjust for population size and allow for more meaningful interpretation of the data. Rates by demographic characteristics and proportional changes from last year are reported only when there were more than 50 cases of a disease reported in the state. Whenever possible, information on disease trends for the United States has been included for comparison with Kansas trends. If the total number of cases in the state was less than 5, then only limited demographic information is presented (to ensure confidentiality of the patients).

Disease incidence for urban and rural areas has been included for many diseases. Urban

counties were defined as counties with a population density of 150 or more persons per square mile, and represent the four largest metropolitan areas in the state [Kansas City (Johnson and Wyandotte Counties), Wichita (Sedgwick County), Topeka (Shawnee County), and Lawrence (Douglas County)], which account for 49% of the population in the state. The remaining 100 counties in the state are classified as rural for the purposes of this report.

Data concerning race and ethnicity were collected uniformly for most diseases as follows: Race - American Indian/Alaska Native, Asian/Pacific Islander, Black, White and Ethnicity - Hispanic, non-Hispanic (regardless of race). For AIDS/HIV, STD, and TB, information were collected using one variable combining race and ethnicity as American Indian/Alaska Native, Asian/Pacific Islander, Black non-Hispanic, White non-Hispanic, or Hispanic. Additionally, although the recommended standard for classifying a person's race or ethnicity is based on self-reporting, this procedure might not always be followed.

Section II provides the list of reportable diseases during 1999, a summary of cases of selected conditions by year for 1990-1999, and a summary of cases by county for 1999. Also included are a list of county abbreviations for use with Table 2, a map of Kansas with county names, and a list of publications on disease control from KDHE in 1999.

### Disease reporting in Kansas

In September, 1999, a new electronic reporting system (HAWK) began for disease surveillance in Kansas. HAWK is a central, statewide database of reportable diseases

which can be accessed remotely by authorized public health officials via the Internet. Remote users can report disease occurrence more efficiently and can also generate summary statistics and some reports to assist them in evaluating the overall effectiveness of public health efforts in their areas.

Selected diseases are reportable by law in Kansas by health care providers, laboratories and hospitals (Section II, Table 1). Reports of infectious diseases are usually first sent to the local health department, which is responsible for providing basic public health interventions such as providing immune globulin to a household contact of a person with hepatitis A or treating sexual contacts of a person with gonorrhea.

Reports are then sent to the Bureau of Epidemiology and Disease Prevention in the Kansas Department of Health and Environment for review. After reports have been entered into the Kansas Integrated Electronic Disease Surveillance System (HAWK), weekly summaries are forwarded to the Centers for Disease Control and Prevention (CDC) for inclusion in the Morbidity and Mortality Weekly Report. The final step in the surveillance system occurs when CDC sends selected data to the World Health Organization.

Surveillance for influenza follows a different model. During 1999-2000 influenza season, seventeen physicians participated in the statewide sentinel physician-based surveillance system. Offices were contacted weekly by telephone to determine the number of patients seen with influenza-like illness by four age groups and total patient visits for all reasons. Influenza-like illness is defined as fever ( $\geq 100^{\circ}\text{F}$  [ $37.8^{\circ}\text{C}$ ], oral or equivalent) AND cough or sore throat. To compare

regional activity, aggregate information from Kansas is sent weekly to CDC. This system plays a key role to monitor influenza in the United States.

In October 1990, in collaboration with Council of State and Territorial Epidemiologists (CSTE), CDC published Case Definitions for Public Health Surveillance to provide uniform criteria for reporting cases to increase the specificity of reporting and improve the comparability of diseases reported from different geographic areas. The CDC/CSTE surveillance case definitions use a combination of clinical, laboratory, and epidemiologic criteria to define cases. Those case definitions were revised in 1997 and can be found at [www.cdc.gov/epo/mmwr/preview/ind97\\_rr.html](http://www.cdc.gov/epo/mmwr/preview/ind97_rr.html).

The usefulness of public health surveillance data depends on its uniformity, simplicity, and timeliness. The case definitions contained in this report follow the CDC/CSTE surveillance definitions for disease reporting and should not be confused with clinical diagnoses. Use of additional clinical, epidemiologic, and laboratory data may enable a physician to diagnose a disease even though the formal surveillance case definition may not be met.

### **Important disease trends in 1999**

Among vaccine-preventable diseases, there were no reported cases of diphtheria, measles, polio, or rubella. The U.S. has been considered polio free since 1979. Mumps and tetanus remained at low levels. Reported cases of acute hepatitis B have steadily declined since 1991 when vaccine use became more widely available. The number of reported confirmed pertussis cases declined in 1999 compared to the previous 2 years, but

pertussis remains the vaccine-preventable disease with the highest number of reported cases. There were three pertussis outbreaks in 1999 and 81 total suspect, probable, and confirmed cases.

The number of reported primary and secondary syphilis cases remained similar to previous year. In 1998, the Sexually Transmitted Disease (STD) Program received 12 reports of primary and secondary syphilis, and in 1999, the STD Program received 14 reports of primary and secondary syphilis. Syphilis cases continue to be concentrated in urban regions of the state. While accounting for a smaller proportion of cases among the many reportable STDs in Kansas, syphilis remains important because of its potential for elimination as well as its role as a risk factor for HIV infection and transmission. Genital ulcer infections, such as syphilis, may increase the risk of HIV transmission 50-300 times. Syphilis diagnosed in early stages can be effectively treated with long-acting penicillin.

The incidence of gonorrhea continues to increase with 2,665 cases reported in 1999 paralleling national trends, although the rate of increase slowed compared to the previous year. Young adults age 20-24 and adolescents age 15-19 have higher rates of infection than the other age groups. Like syphilis, gonorrhea is concentrated in urban areas of the state.

Chlamydia remains the most frequently reported sexually transmitted disease in Kansas and 6,093 cases were reported in 1999. In contrast to gonorrhea and syphilis, chlamydia is more widely distributed geographically. Over 80% of reported cases occur among females. This gender disparity reflects the focus of chlamydia detection activities in the state which target females.

Among reported cases of these three major bacterial STDs racial and ethnic minorities are disproportionately represented, which mirrors national trends. This may reflect reporting bias (e.g., African-Americans may use public STD clinics more often for health care and be more likely to be screened or reported if positive). Both syphilis and gonorrhea infections are largely confined to the urban areas of the state, while at least one case of chlamydia occurred in 96 of 105 counties. This distribution is also reflective of the national trends. The majority of reported syphilis comes from public clinics, whereas chlamydia and gonorrhea infections are reported primarily from private physician and clinics.

The number of reported Kansas AIDS cases increased from 1998 through 1999. This increase may be largely due to expanded active surveillance. Male-to-male sex continues to be the leading risk behavior. The number of persons reported without a known risk factor remains at eight percent for the first year after reporting. However, many cases are reclassified into known risk categories after further investigation. Beginning July 1, 1999, HIV infections were reported by name in Kansas. Data on HIV infection with no AIDS diagnosis is not included in this report.

Sixty-nine cases of tuberculosis (TB) were reported in Kansas in 1999, a 23% increase from 56 cases reported in 1998. Overall, the TB case rate in Kansas was 2.6/100,000, up from 2.1/100,000 in 1998. The 1999 Kansas cases rate was below the 1998 national case rate of 6.8/100,000 and below the Healthy People 2000 objectives of 3.5 cases/100,000, but above the Healthy Kansas 2000 goal of 1 case/100,000. Of the state's 69 cases, 29 (42%) were among foreign-born individuals,

with 40 (58%) among individuals born in the United States. There were three cases of TB-HIV co-infection, up from just one case in 1998. There were no reported case of multi-drug resistant TB (MDR-TB) in 1999.

Enteric infections (salmonellosis, shigellosis and giardiasis) continued to be reported in large numbers. Reports of *E. coli* O157:H7 decreased slightly during 1999. Five foodborne outbreaks of gastro-intestinal illness were reported and formally investigated by Epidemiologic Services during 1999. Two of the food-related illness outbreaks were attributed to *Salmonella spp.* (serotypes *javiana* and *newport*), and no causative agent was positively identified in the remainder of food related illness.

### Interpreting the data

When interpreting the data in this report it is important to remember that disease reporting is incomplete and often varies by disease. For example, reporting of AIDS cases is estimated to be 90% complete whereas reporting of salmonellosis is estimated to be 3-5% complete. Absolute numbers are less meaningful than trends when interpreting the data. However, trends can be influenced by changes in case definitions, in reporting patterns, or by random fluctuations. It is also important to note that since 59% (62/105) of counties in Kansas have populations less than 10,000, it is possible to have high rates of disease in these counties even if only very few cases are reported.

### Acknowledgments

We would like to thank all the physicians, physician assistants, nurses, hospitals, laboratorians, county health department staff, and others who participated in reportable disease surveillance during 1999. We would

also like to acknowledge the Bureau of Epidemiology and Disease Prevention staff for their support.

### Useful web sites

This report, Reportable Diseases in Kansas, annual summary, is available on the internet at: <http://www.kdhe.state.ks.us/epi>

Health education facts sheets and brochures that address public health can be found at: <http://www.kdhe.state.ks.us/health-info>

AIDS/HIV:  
<http://www.kdhe.state.ks.us/aids>

Influenza:  
<http://www.cdc.gov/ncidod/diseases/flu/weekly.htm>

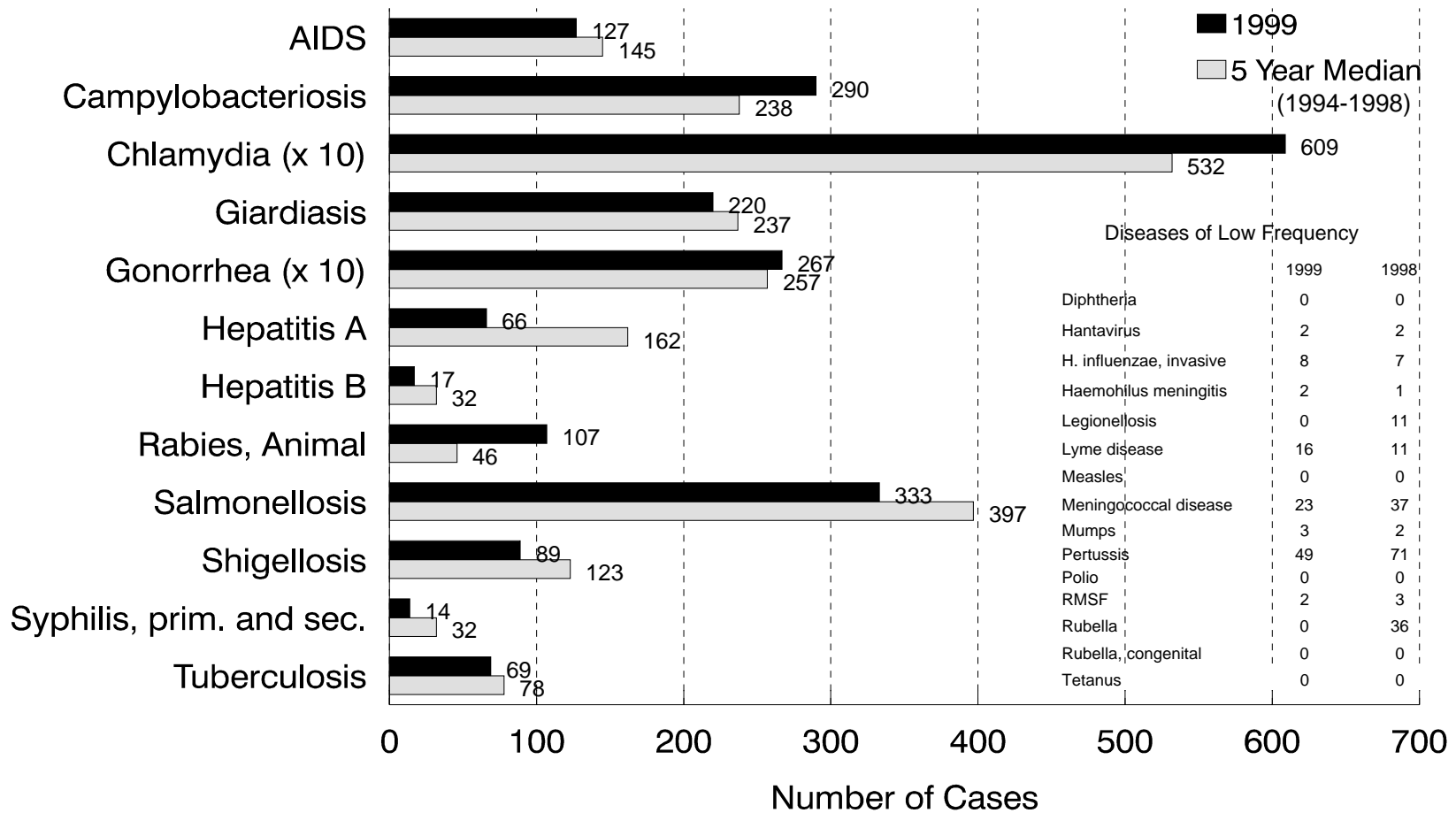
International Travel:  
<http://www.cdc.gov/travel>

STD:  
<http://www.kdhe.state.ks/std>

TB:  
<http://www.kdhe.state.ks/tb>

Vaccines:  
<http://www.cdc.gov/od/nvpo/main.htm>

## Selected Reportable Diseases in Kansas, 1999







**SECTION I**

**DISEASE**

**SUMMARIES**

## ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

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AIDS is a severe, life-threatening condition which was first recognized as a distinct syndrome in 1981. It is caused by a virus, human immunodeficiency virus (HIV), that damages the body's immune system and destroys its ability to fight illness. AIDS itself doesn't kill the patient; rather it allows other infections and diseases to invade the body, and it is those opportunistic diseases that kill. Most people infected with HIV develop detectable antibodies within 1-3 months after infection, but may remain free of signs or symptoms for several months to years. Clinical illness may include lymphadenopathy, chronic diarrhea, weight loss, fever, and fatigue. The severity of HIV-related illness is, in general, directly related to the degree of immune dysfunction. The disease can be transmitted from person to person through unprotected sexual contact, sharing HIV-contaminated needles and syringes, from mother to infant, and transfusion of infected blood or its components. No vaccine exists for HIV infection, but considerable progress has been made in the development of antiretroviral therapies which slow viral progression and significantly reduce the amount of virus in an infected person.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- AIDS: Detection of either a) <200 CD4+ T-lymphocytes/ $\mu$ L; b) a CD4+ T-lymphocyte percentage of total lymphocytes of <14%; or c) any of 24 specific diseases or syndromes.
- HIV infection: Western blot confirmed (positive/reactive) antibody test, HIV p24 antigen test, HIV nucleic acid (DNA or RNA) detection, HIV isolation (viral cultures).

### *Surveillance Case Definition*

- All HIV-infected adolescents aged  $\geq 13$  years and adults who have either (a) CD4+ t-lymphocyte count <200 or <14% or (b) being diagnosed with one of opportunistic infections. Complete information on the case definition can be found in MMWR 1997; 46 (No. RR-10).
- The AIDS surveillance case definition for children aged <13 years includes the clinical conditions listed in the AIDS surveillance case definition found in MMWR 1997; 46 (No. RR-10).

### *Note:*

- The case definitions for adult and pediatric HIV infection has been expanded effective 1/1/2000. It includes HIV nucleic acid (DNA or RNA) detection tests (viral load tests) that were not available when the AIDS case definition was revised in 1993. The revised HIV case definitions in adults and children are outlined in MMWR 1999; 48 (No. RR-13: 1-31).
- HIV reporting by name began in Kansas, July 1, 1999. Information on HIV reports is not included in this year's annual summary.
- More detailed information on AIDS is available in the Kansas AIDS/STD Update, the "HIV/AIDS Epidemiologic Profile", and [www.kdhe.state.ks.us/aids](http://www.kdhe.state.ks.us/aids).

## *Epidemiology and Trends*

<i>1999 Case Total</i>	127
Kansas rate	4.8 per 100,000
U.S. rate (1999)	16.7 per 100,000

### *Rate by gender*

Female	1.3 per 100,000
Male	8.3 per 100,000

### *Rate by Race/ethnicity*

White	3.6 per 100,000
African-American	21.7 per 100,000
Asian/Pacific Islander	2.3 per 100,000
Hispanic	8.6 per 100,000

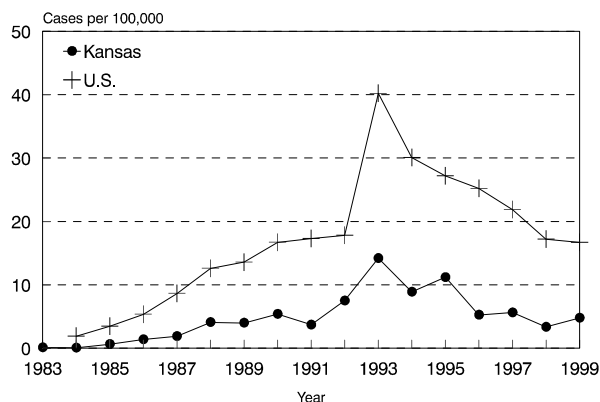
### *Rate by geographic area*

Urban	7.5 per 100,000
Rural	2.1 per 100,000

From 1981 through December 31, 1999, 2,163 AIDS cases had been reported to KDHE. In 1999, 127 cases of AIDS were reported throughout Kansas, reflecting a 46% increase from the 87 cases reported in 1998. This increase could be a result of implementing an active HIV/AIDS surveillance system rather than just waiting for reports from providers and laboratories. Since the majority of opportunistic infections are not reportable, the active surveillance system gives us the opportunity to review medical records in order to ascertain disease status. There may also be an increasing number of people infected.

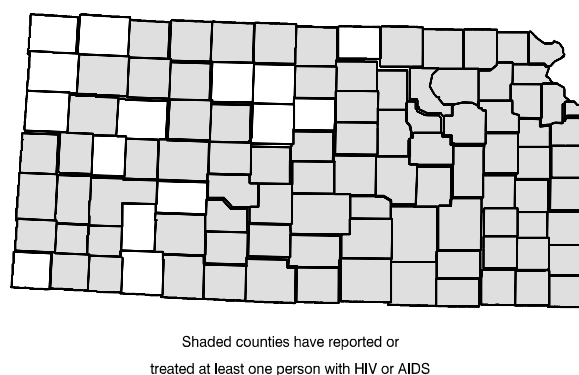
The cases ranged in age from 10 to 56 years of age; median age was 36 years. Males comprised 86% of AIDS cases. Non-Whites, who represent less than 10% of the state's population, accounted for 35% of AIDS cases in 1999. The most populous county, Sedgwick, had the largest number of cases (36%). The four largest metropolitan area which account for 49% of the state population, comprised 78% of the total number of cases. Of the 127 cases reported in 1999, men who have sex with men (MSM) account for the largest number of AIDS cases (51%), followed by cases attributable to heterosexual contact (18%), and injection drug use (12%). The most common mode of transmission among women was unprotected heterosexual contact (67%), and among men unprotected male to male sexual contact (59%).

AIDS incidence rate by year of report  
Kansas, 1983-1999

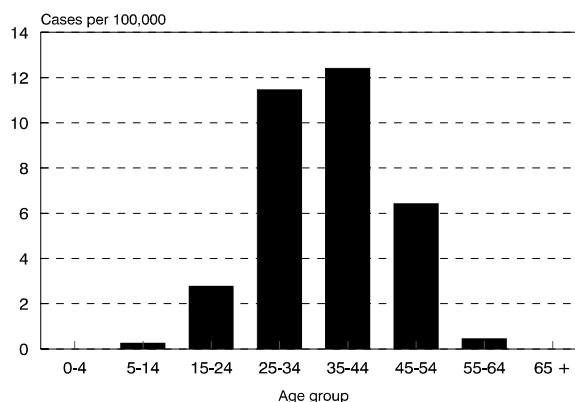


Introduction of a new case definition accounts for the large number of cases in 1993.

Counties affected by HIV/AIDS  
Kansas, diagnosed 1981-1999



AIDS rate by age group  
Kansas, 1999



## AMEBIASIS

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Amebiasis is an infection with the protozoan parasite *Entamoeba histolytica*. Most infections are asymptomatic but may become clinically important under certain circumstances such as with a liver abscess. Intestinal disease varies from acute or fulminating dysentery with fever, chills, and bloody or mucoid diarrhea (amebic dysentery), to mild abdominal discomfort with diarrhea containing blood or mucus alternating with periods of constipation or remission. The incubation period varies from a few days to several months or years; commonly 2-4 weeks. Transmission occurs mainly by ingestion of fecally contaminated food or water containing amebic cysts, or sexually by oral-anal contact. The cysts are relatively chlorine resistant and are not reliably killed by routine drinking water chlorination processes, but sand or diatomaceous earth filtration removes all cysts.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

#### ***Intestinal amebiasis:***

- Demonstration of *E. histolytica* cysts or trophozoites in stool, ***or***
- Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology.

#### ***Extraintestinal amebiasis:***

- Demonstration of *E. histolytica* trophozoites in extraintestinal tissue.

### ***Surveillance Case Definition***

- ***Confirmed, intestinal amebiasis:*** clinically compatible illness that is laboratory confirmed.
- ***Confirmed, extraintestinal amebiasis:*** a parasitologically confirmed infection of extraintestinal tissue, or among symptomatic persons (with clinical or radiographic findings consistent with extraintestinal infection), demonstration of specific antibody against *E. histolytica* as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunosorbent assay).

## *Epidemiology and Trends*

<i>1999 Case Total</i>	9
Kansas rate	0.3 per 100,000
U.S. rate	N/A

### *Cases by gender*

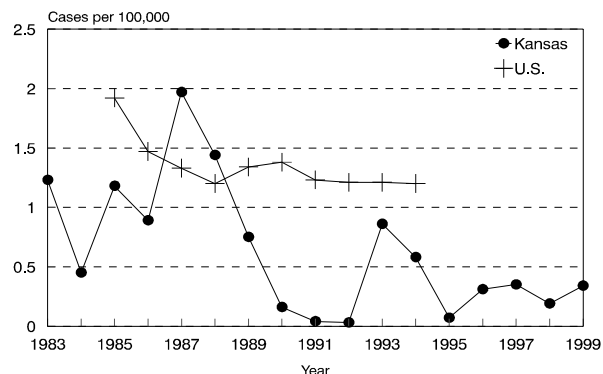
Female	3
Male	6

### *Cases by geographic area*

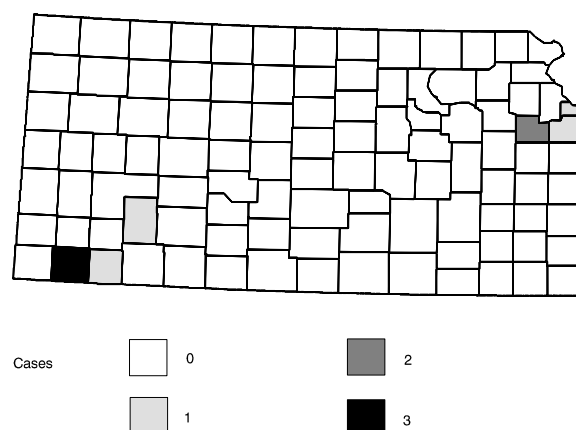
Urban	4
Rural	5

Seventy-six cases of Amebiasis were reported in Kansas for the ten year period 1990-1999. The largest number of cases was reported in 1993, 22 (33%); these were sporadic cases, no outbreaks were reported. In 1999, nine cases were reported. The cases ranged in age from 3 to 64 years with a median age of 20.

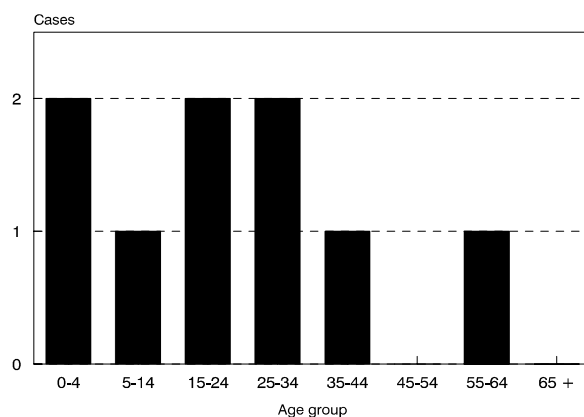
Amebiasis incidence rate by year of report  
Kansas, 1983-1999



Amebiasis cases by county  
Kansas, 1999



Amebiasis cases by age group  
Kansas, 1999



## CAMPYLOBACTERIOSIS

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Campylobacteriosis is an acute bacteria enteric disease caused by *Campylobacter jejuni* and, less commonly, *C. coli*. It is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting. The illness is frequently over within 2-5 days. Prolonged illness and relapses may occur in adults. The mode of transmission is by ingestion of the organisms in undercooked poultry or pork, contaminated food and water, or raw milk; from contact with infected pets (especially puppies and kittens), farm animals or infected infants. Contamination of milk most frequently occurs from feces of carrier cattle; people and food can be contaminated from poultry, especially from common cutting boards. Person-to-person transmission appears to be uncommon with *C. jejuni*.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Campylobacter* from any clinical specimen.

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.
- *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.

## Epidemiology and Trends

1999 Case Total	290
Kansas rate	10.9 per 100,000
U.S. rate	N/A

### Rate by gender

Female	9.7 per 100,000
Male	11.2 per 100,000

### Rate by Race/ethnicity

White	8.1 per 100,000
African-American	0.7 per 100,000
Asian/Pacific Islander	6.5 per 100,000
Hispanic	9.3 per 100,000

### Rate by geographic area

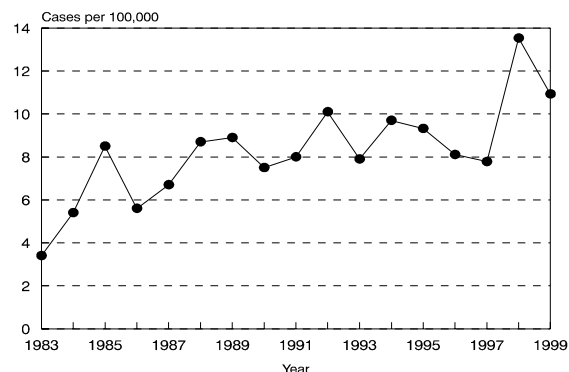
Urban	10.0 per 100,000
Rural	11.9 per 100,000

Campylobacteriosis is one of the most commonly reported gastrointestinal illnesses in Kansas. In 1999, 290 cases were reported, a 17% decrease over the 351 cases reported in 1998. No outbreaks were reported.

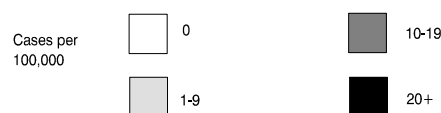
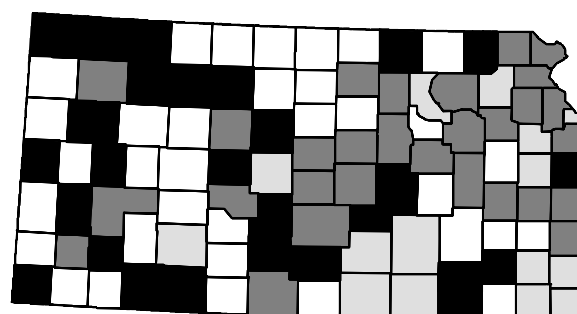
The cases ranged in age from less than 1 year to 90 years of age. The median age was 31 years and the highest incidence rate occurred in those under 5 years of age (19.6/100,000); 53% of the cases were in males. Sixty-seven percent of cases were Whites, 1% Asian/Pacific Islanders, <1% African-Americans, and in 31% of cases race was not reported. Over half (55%) of the cases were reported from rural areas.

A serotype was known for 57% (165) of the cases reported. *C. jejuni* (96%, 158 cases) was the predominant serotypes, followed by *C. coli* (4%, 7 cases).

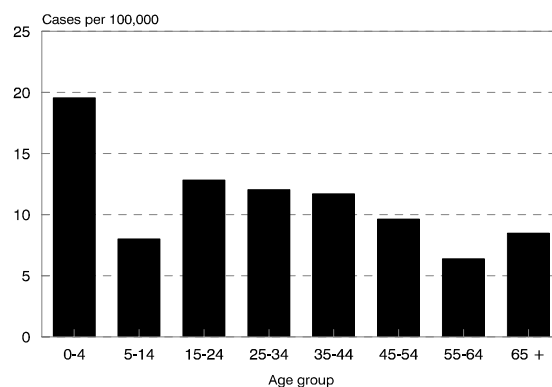
Campylobacteriosis incidence rate by year  
Kansas, 1983-1999



Campylobacteriosis rate by county  
Kansas, 1999



Campylobacteriosis rate by age group  
Kansas, 1999





## CHLAMYDIA

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*Chlamydia trachomatis* is a sexually transmitted genital infection which is manifested in males primarily as a urethritis, and in females as a mucopurulent cervicitis. Asymptomatic infections are common. Clinical manifestations of urethritis are often difficult to distinguish from gonorrhea and include mucopurulent discharges of scanty or moderate quantity, urethral itching, and burning on urination. The incubation period is poorly defined, probably 7-14 days or longer. Complications of chlamydia in males include epididymitis that can lead to sterility. Individuals who engage in receptive anorectal intercourse may develop chlamydia proctitis. Common complications in women include salpingitis and chronic infection of the endometrium and fallopian tubes. These complications can lead to infertility and ectopic pregnancies. Endocervical chlamydia infection has been associated with increased risk of HIV infection. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *C. trachomatis* by culture **or**
- Demonstration of *C. trachomatis* in a clinical specimen by detection of antigen or nucleic acid.

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.
- *Probable*: a written morbidity report of chlamydia submitted by a physician.

### ***Comment***

- Chlamydia became reportable in 1985 in Kansas. State-wide screening began in 1990, targeting females  $\leq 29$  years of age. In July of 1995, the screening criteria were amended based on data collected in both the state and the region. Guidelines, recommended by the Region VII Infertility Prevention Project (which includes Iowa, Kansas, Missouri, and Nebraska), are to screen the following individuals: (1) all female STD clinic patients, (2) in family planning clinics, all females  $\leq 24$  years old, and females  $\geq 25$  years old with one of the following characteristics: contact to an STD, symptoms suggesting an STD, and/or a new sexual partner since last exam. In addition, prenatal clinics screen all clients upon initial exam.
- In 1999, a total of 43,206 tests were performed by Kansas Health and Environmental Laboratory, Sedgwick and Wyandotte County laboratories with an overall chlamydia positivity rate of 4.6% (2,005/43,206). A total of 6,093 chlamydia cases were reported for 1999 from providers and laboratories across Kansas.
- K.A.R. 28-1-6 requires that isolation or quarantine measures shall be established by the local health officer for persons who are confirmed or suspected of being infected with a STD if these persons are recalcitrant to proper treatment.
- More detailed information on STDs in Kansas is available at: [www.kdhe.state.ks.us/std](http://www.kdhe.state.ks.us/std).

## Epidemiology and Trends

1999 Case Total	6,093
Kansas rate	229.6 per 100,000
U.S. rate (1998)	236.6 per 100,000

### Rate by gender

Female	373.3 per 100,000
Male	81.1 per 100,000

### Rate by Race/ethnicity

White	137.0 per 100,000
African-American	1,411.3 per 100,000
Asian/Pacific Islander	192.7 per 100,000
Native American	319.2 per 100,000
Hispanic	503.1 per 100,000

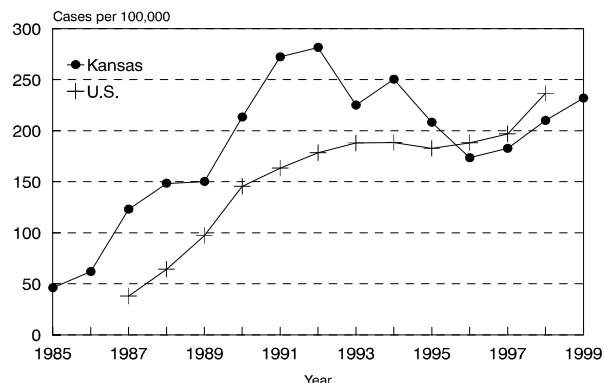
### Rate by geographic area

Urban	290.5 per 100,000
Rural	169.9 per 100,000

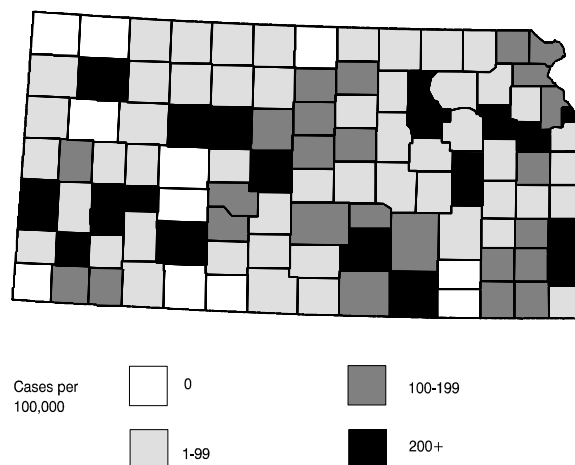
*Chlamydia trachomatis* continued to be the most frequently reported sexually transmitted disease in Kansas, with 94 of 105 counties reporting at least one case in 1999. A total of 6,093 chlamydia infections were reported during 1999, higher than the five-year median (for 1994-1998) of 5,315. This represented an increase of 12% over the 5,446 cases reported in 1998. There has been an upward trend since 1995, but the Kansas rate has been below the national rate during that time.

The cases ranged in age from 1 to 96 years with a median age of 20. Females accounted for 83% of the reported cases and 80% of all reported cases in 1999 occurred in the 15-24 age group. This figure may be skewed due to the focused screening efforts among women. Whites account for more cases than any other race but the case rates for other races is higher than whites. Members of the African-American population were disproportionately affected by chlamydia during 1999. This may reflect reporting bias, as described in the introduction. The largest number of cases and highest rates occurred in the four largest metropolitan areas which accounted for 63% of the cases.

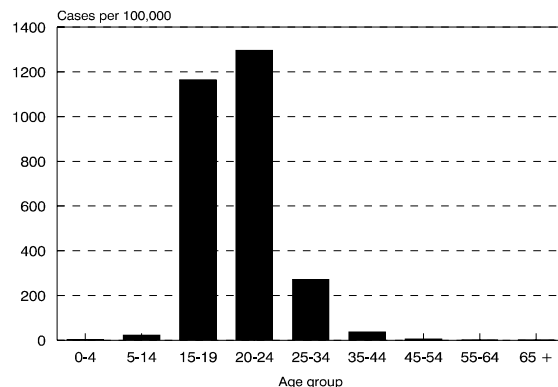
Chlamydia incidence rate by year  
Kansas, 1985-1999



Chlamydia rate by county  
Kansas, 1999



Chlamydia rate by age group  
Kansas, 1999



## CRYPTOSPORIDIOSIS

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Cryptosporidiosis is caused by the parasite *Cryptosporidium parvum*. Illness is characterized by diarrhea, abdominal cramps, loss of appetite, low-grade fever, nausea, and vomiting. Symptoms often wax and wane but disappear in less than 30 days in most immunologically healthy people and infected persons may be asymptomatic. The disease can be prolonged and life-threatening in severely immunocompromised persons. Incubation period is not precisely known, but 1-12 days is the likely range. The source of the infection is usually stools from infected individuals of animals. It is spread by fecal-oral contact. Hands can become contaminated with parasites when a person changes the diaper of an infant with cryptosporidiosis or from improper hand washing after toileting. Pets, farm animals, and unpasteurized milk can also transmit the parasite. Outbreaks have been associated with drinking contaminated water, bathing in contaminated swimming pools and lakes, and drinking unpasteurized apple cider. Normal water chlorination processes are not effective against the oocyst form of the parasite. Heating water to 45°C (113 °F) for 5-20 minutes, 60 °C (140 °F) for 2 minutes, or chemical disinfection with 10% formalin or 5% ammonia solution is effective.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Demonstration of *Cryptosporidium* oocysts in stool, ***or***
- Demonstration of *Cryptosporidium* in intestinal fluid or small-bowel biopsy specimens, ***or***
- Demonstration of *Cryptosporidium* antigen in stool by a specific immunodiagnostic test (e.g., enzyme-linked immunosorbent assay).

### ***Surveillance Case Definition***

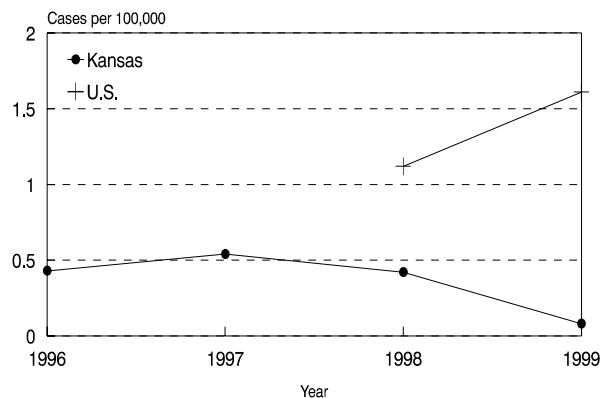
- *Confirmed*: a case that is laboratory confirmed.
- *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.

### *Epidemiology and Trends*

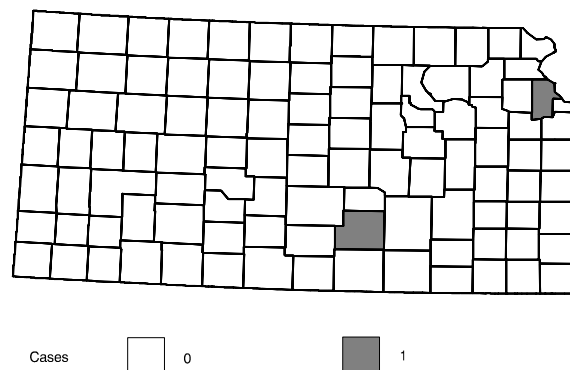
<i>1999 Case Total</i>	2
Kansas rate	0.1 per 100,000
U.S. rate (1998)	1.6 per 100,000

Cryptosporidiosis has been a reportable disease in Kansas since 1996. In 1999, there were 2 cases of cryptosporidiosis reported in Kansas; the five-year median for 1994-1998 was 11 cases.

Cryptosporidiosis incidence rate by year  
Kansas, 1996-1999



Cryptosporidiosis cases by county  
Kansas, 1999



## ***Escherichia coli* O157:H7 (including hemolytic uremic syndrome)**

---

*E. coli* O157:H7 is one of hundreds of strains of the bacterium *Escherichia coli*. Although most strains are harmless and live in the intestines of healthy humans and animals, this strain produces a powerful toxin and can cause severe illness. It is characterized by bloody or non-bloody diarrhea, accompanied by abdominal cramps. The infection it causes can lead to the hemolytic uremic syndrome (HUS - a blood and kidney illness) and thrombotic thrombocytopenic purpura (TTP - a blood and kidney illness that can also affect the nervous system). Young children and the elderly are at increased risk for the severe complications of this infection, occasionally resulting in death. Asymptomatic infections may also occur. Incubation period is from 3 to 8 days, with a median of 3-4 days. *E. coli* O157:H7 infections have been linked to eating under-cooked ground beef and drinking unpasteurized contaminated juice. Outbreaks have also been traced back to contaminated produce. The organism can also spread easily from person to person, especially in day care centers and nursing homes. Waterborne transmission has occurred.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Escherichia coli* O157:H7 from a specimen ***or***
- Isolation of Shiga toxin-producing *E. coli* O157:NM from a clinical specimen.

### ***Surveillance Case Definition***

- ***Confirmed:*** a case that is laboratory confirmed.
- ***Probable:*** (a) a case with isolation of *E. coli* O157 from a clinical specimen, pending confirmation of H7 or Shiga toxin ***or***  
(b) a clinically compatible case that is epidemiologically linked to a confirmed or probable case.
- ***Suspected:*** a case of postdiarrheal HUS or TTP.

### ***Comment***

- Confirmation is based on laboratory findings, and clinical illness is not required.
- Kansas laws require that isolates be sent to Kansas Health and Environmental Laboratory for serotyping.
- K.A.R. 28-1-6 requires that infected persons shall be excluded from food handling, patient care, or occupations involving the care of young children and the elderly, and infected children shall not attend a day care center until two negative stool cultures are obtained at least 24 hours apart and no sooner than 48 hours following discontinuation of antibiotics. Enteric precautions shall be followed for the duration of acute symptoms.

**NOTE:** Starting in 2000, all enterohemorrhagic, enteropathogenic and enteroinvasive *E. coli* infections are reportable.

### *Epidemiology and Trends*

1999 Case Total	31
Kansas rate	1.2 per 100,000
U.S. rate (1998)	1.3 per 100,000

#### *Cases by gender*

Female	17
Male	14

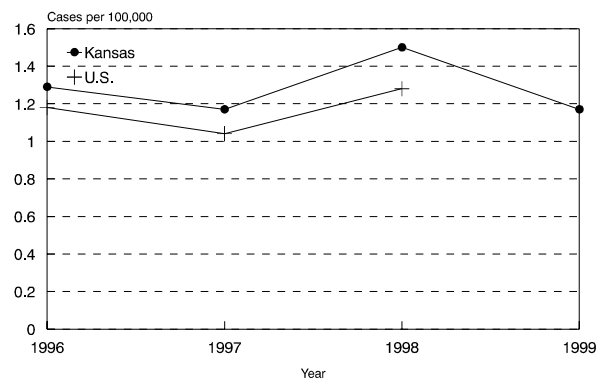
#### *Cases by geographic area*

Urban	17
Rural	14

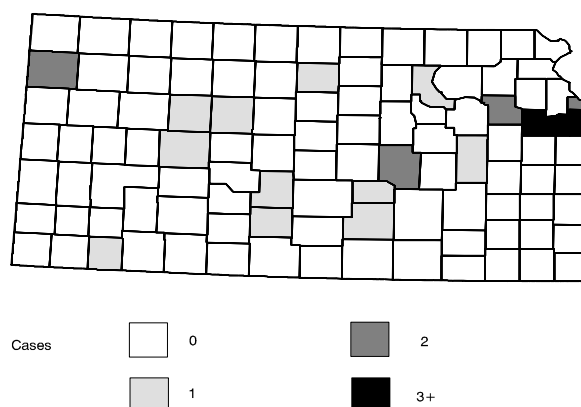
*E. coli* O157:H7 infection has been a reportable disease in Kansas since 1996. There were 31 cases of *E. coli* reported in Kansas in 1999. No hemolytic uremic syndrome cases were reported. All reported cases were apparently sporadic cases; no outbreaks were detected in 1999.

The cases ranged in age from less than 1 year to 64 years of age. The median age was 25 years. The highest incidence occurred in those 5-14 years of age. Over half (55%) of the cases were females.

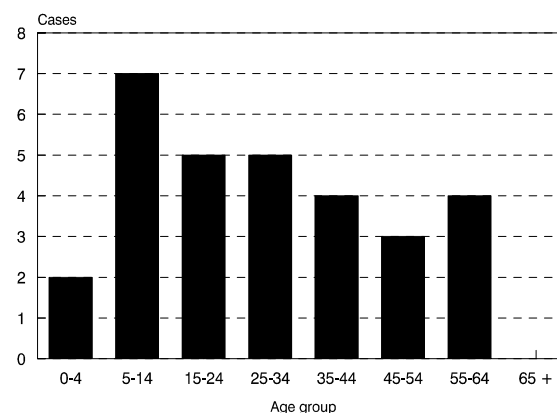
*E. coli* O157:H7 incidence rate by year  
Kansas, 1996-1999



*E. coli* O157:H7 cases by county  
Kansas, 1999



*E. coli* O157:H7 cases by age group  
Kansas, 1999



## ENCEPHALITIS, INFECTIOUS

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An encephalitis is an acute inflammatory viral disease of short duration involving parts of the brain, spinal cord and meninges. Infectious agents associated with encephalitis may be viral, fungal, or bacterial. Encephalitis also may be post-infectious, with onset two to twelve days after a primary viral infection such as measles, varicella, rubella, or mumps. Some forms of infectious encephalitis are mosquito-borne (arboviral encephalitis). Signs and symptoms of these diseases are similar but vary in severity and rate of progress. Most infections are asymptomatic; mild cases often occur as febrile headache. Severe infections are usually marked by acute onset, headache, high fever, stupor, disorientation, coma, tremors, occasionally convulsions (especially in infants), and paralysis. The incubation period and mode of transmission varies depending on the infectious agent.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Fourfold or greater change in serum antibody titer, **or**
- Isolation of infectious agent from or demonstration of viral antigen or genomic sequences in tissue, blood, cerebrospinal fluid (CSF), or other body fluid, **or**
- Specific immunoglobulin M (IgM) antibody by enzyme immunoassay (EIA) antibody captured in CSF or serum. Serum IgM antibodies alone should be confirmed by demonstration of immunoglobulin G antibodies by another serologic assay (e.g., neutralization or hemagglutination inhibition).

### *Surveillance Case Definition*

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a clinically compatible case occurring during a period when arboviral transmission is likely, and with the following supportive serology: a stable ( $\leq$ twofold change) elevated antibody titer to an arbovirus (e.g.,  $\geq 320$  by hemagglutination inhibition,  $\geq 128$  by complement fixation,  $\geq 256$  by immunofluorescence, and  $\geq 160$  by neutralization, or  $\geq 400$  by enzyme immunoassay IgM).

### *Epidemiology and Trends*

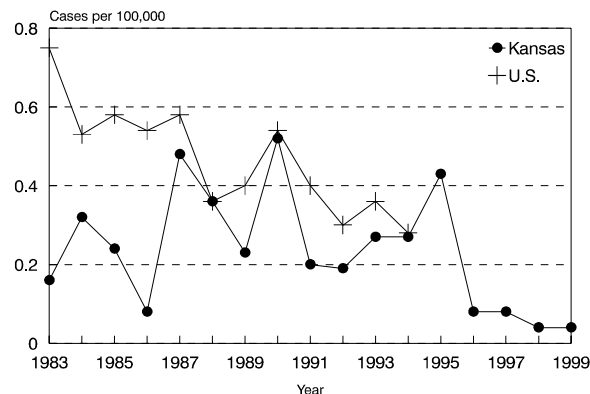
1999 Case Total	1
Kansas rate	<0.1 per 100,000
U.S. rate	N/A

A total of 59 cases of infectious encephalitis were reported for the ten year period, 1989-1998. There have been 1-13 cases reported annually in Kansas. In 1999, there was one viral encephalitis case reported.

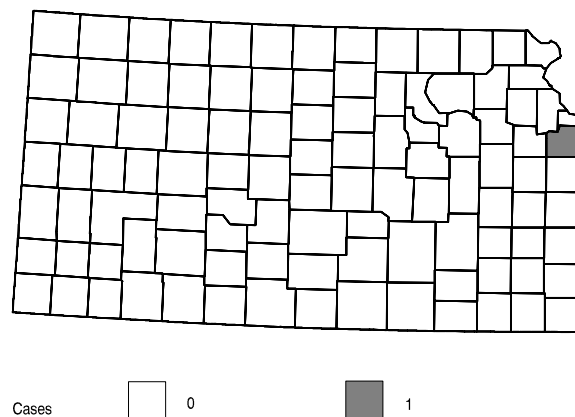
There were total of 125 Saint Louis encephalitis and 36 Western equine encephalitis cases reported in Kansas between 1964-1999. No arboviral encephalitis cases were reported in 1999.

**West Nile Encephalitis** - An outbreak of arboviral (arthropod-borne) encephalitis was recognized in New York City in August, 1999. Initially attributed to St. Louis encephalitis, the cause of the outbreak has been confirmed as West Nile virus (MMWR Vol. 48 / No. 38). A total of 56 laboratory confirmed cases, including seven deaths, have been reported from the state of New York. This disease is carried by many mosquito species and also affects horses and birds. It is not known when or how this virus was introduced into North America. This virus has not been reported in Kansas among humans or animals.

Infectious Encephalitis incidence rate by year  
Kansas, 1983-1999



Infectious Encephalitis cases by county  
Kansas, 1999





## GIARDIASIS

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Giardiasis is an illness caused by *Giardia lamblia*, a one-celled, microscopic parasite that lives in the intestines of people and animals. The most common symptoms are diarrhea, abdominal cramps, and nausea, but asymptomatic infections may also occur. Symptoms may lead to weight loss and dehydration, appear 1-2 weeks after infection, and may last 4-6 weeks. It is most commonly transmitted through oral-fecal contact and by water contaminated with feces.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Demonstration of *Giardia lamblia* cysts in stool, ***or***
- Demonstration of *Giardia lamblia* trophozoites in stool, duodenal fluid, or small bowel biopsy, ***or***
- Demonstration of *Giardia lamblia* antigen by specific immunodiagnostic test such as Direct Fluorescent Antigen (DFA).

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.

## *Epidemiology and Trends*

<i>Case Total</i>	220
Kansas rate	8.3 per 100,000
U.S. rate	N/A

### *Rate by gender*

Female	7.4 per 100,000
Male	8.9 per 100,000

### *Rate by Race/ethnicity*

White	6.5 per 100,000
African-American	1.3 per 1000,000
Asian/Pacific Islander	23.7 per 100,000
Native American	12.9 per 100,000
Hispanic	9.3 per 100,000

### *Rate by geographic area*

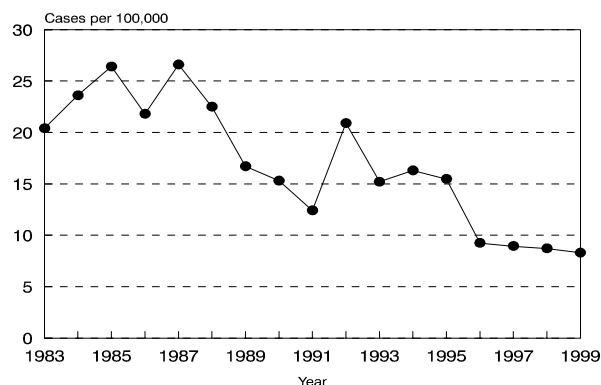
Urban	7.7 per 100,000
Rural	8.9 per 100,000

In Kansas, there were 220 giardia cases reported in 1999, a slight decrease compared to 226 cases in 1998. Reports of the disease in general decreased over the past 10 years. The five-year median for 1994-1998 was 237 cases.

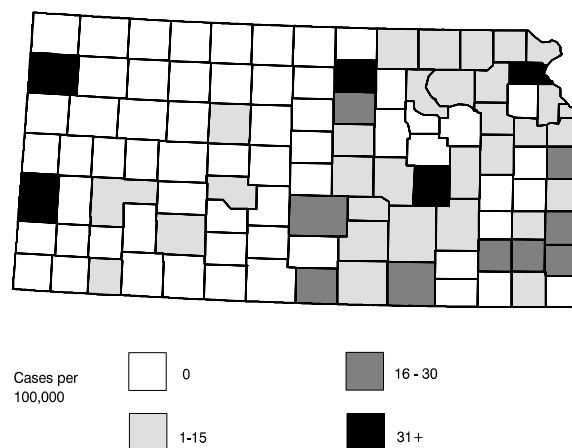
The cases ranged in age from less than 1 year to 88 years of age (median 28). This disease continues to affect primarily those less than 5 years of age with an incidence rate of 33 cases per 100,000 population. The majority of cases were Whites (71%), with an incidence rate of 7/100,000.

Over half (54%) of the cases were reported from rural areas. However, among specific counties, Johnson county had the largest number of reported cases with a county-specific rate of 11.1/100,000, followed by Sedgwick county with a county-specific rate of 7.3/100,000.

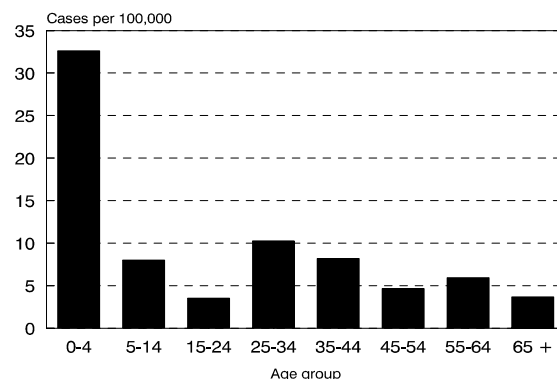
Giardiasis incidence rate by year  
Kansas, 1983-1999



Giardiasis rate by county  
Kansas, 1999



Giardiasis rate by age group  
Kansas, 1999



## GONORRHEA

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Gonorrhea is a bacterial infection caused by *Neisseria gonorrhoeae*. Symptoms of gonorrhea usually appear within two to 10 days after sexual contact with an infected partner, although a small percentage of patients may be infected for several months without showing symptoms. In males it is usually characterized by a purulent urethral discharge and dysuria. In females, there is an initial urethritis or cervicitis often so mild it may pass unnoticed. Dependent upon sexual practices, pharyngeal and anorectal infections can occur. In males, the urethral infection is usually self-limiting; however, it may progress to epididymitis, and in rare cases, it can disseminate into an arthritis-dermatitis syndrome, endocarditis, and meningitis. Twenty percent of women infected with gonorrhea may progress to uterine infection which may lead to endometritis, salpingitis pelvic inflammatory disease (PID), and the subsequent risk of infertility.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Isolation of typical gram-negative, oxidate-positive diplococci (presumptive *Neisseria gonorrhoeae*) from a clinical specimen, **or**
- Demonstration of *N. gonorrhoeae* in a clinical specimen by detection of antigen or nucleic acid, **or**
- Observation of gram-negative intracellular diplococci in a urethral smear obtained from a male.

### *Surveillance Case Definition*

- *Confirmed:* a case that is laboratory confirmed.
- *Probable:* (a) demonstration of gram-negative intracellular diplococci in an endocervical smear obtained from a female **or**  
(b) a written morbidity report of gonorrhea submitted by a physician.

### *Comments*

- The gonorrhea screening program began in Kansas in 1973, providing testing in STD, prenatal, family planning, student health and prison facilities. The STD program contracts with Sedgwick and Wyandotte County Health Department Laboratories to perform tests for selected physicians in these communities.
- In 1999, a total of 43,206 tests were performed by Kansas Health and Environmental Laboratory, Sedgwick and Wyandotte County laboratories with an overall positivity rate of 2.0% (859/43,206). The total of 2,665 reported gonorrhea cases for 1999 are reported from providers and laboratories across Kansas.
- K.A.R. 28-1-6 requires that isolation or quarantine measures shall be established by the local health officer for persons who are confirmed or suspected of being infected with a STD if these persons are recalcitrant to proper treatment.
- More detailed information on STDs in Kansas is available at: [www.kdhe.state.ks.us/std](http://www.kdhe.state.ks.us/std).

## Epidemiology and Trends

<i>Case Total</i>	2,665
Kansas rate	100.4 per 100,000
U.S. rate (1998)	132.9 per 100,000

### Rate by gender

Female	116.7 per 100,000
Male	83.6 per 100,000

### Rate by Race/ethnicity

White	30.7 per 100,000
African-American	1177.6 per 100,000
Asian/Pacific Islander	43.6 per 100,000
Native American	84.8 per 100,000
Hispanic	123.1 per 100,000

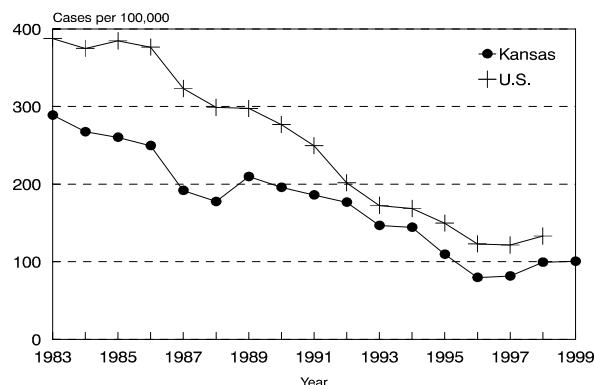
### Rate by geographic area

Urban	159.8 per 100,000
Rural	42.3 per 100,000

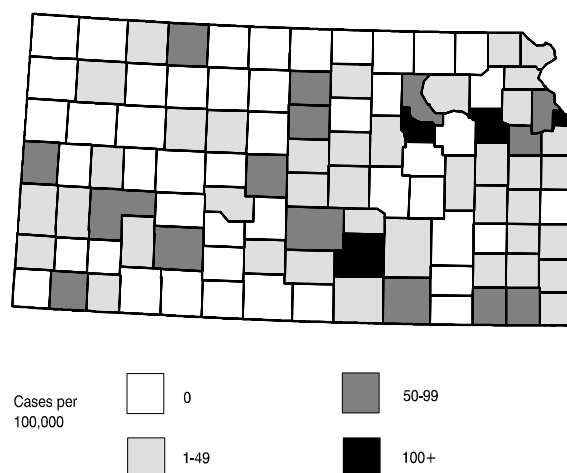
Gonorrhea is the second most commonly reported sexually transmitted disease in Kansas. In 1999, 2,665 cases of gonorrhea were reported in Kansas, an increase of 4% from 1998 (2,574). The five-year median for 1994-1998 was 2,527 cases. The cases ranged from 0 to 91 years of age. The median age was 21 years. Females accounted for 59% of the reported cases. As with chlamydia, gonorrhea infections disproportionately affect females in their childbearing years. Sixty-seven percent of all reported cases in 1999 occurred in the 15-24 age group.

Members of the African-American population were disproportionately affected by gonorrhea during 1999. African-Americans accounted for 65% of all reported gonorrhea infections, followed by Whites (26%), Hispanics (6%), and Native Americans, Asian/Pacific Islanders each with less than 1% of the total cases. This may be due to differences in screening sites and in reporting bias, as described in the introduction. However, even when looking within screening sites, the positivity rate of gonorrhea was higher among African-Americans and Hispanics than among whites. Urban areas continued to report the majority of infections, with Wyandotte and Sedgwick Counties accounting for 62% of the total cases reported.

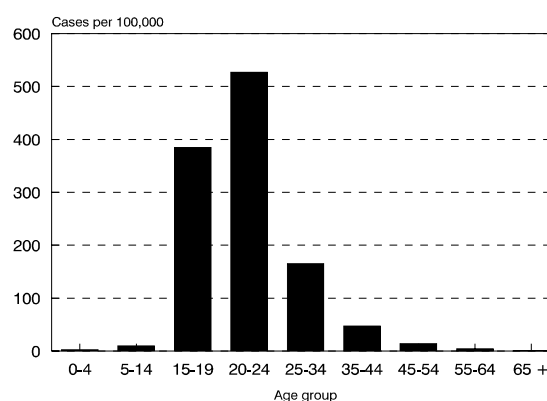
Gonorrhea incidence rate by year  
Kansas, 1983-1999



Gonorrhea rate by county  
Kansas, 1999



Gonorrhea rate by age group  
Kansas, 1999



## ***HAEMOPHILUS INFLUENZAE, invasive disease\****

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*Haemophilus influenzae* is a Gram-negative cocobacillus that causes invasive diseases such as meningitis, septic arthritis, epiglottitis, cellulitis, bacteremia, and pneumonia. Invasive disease can be caused by serotypes a through f. Most cases of invasive diseases in children were caused by type b before the introduction of *H. influenzae* type b (Hib) conjugate vaccination. The source of the organism is the upper respiratory tract of humans. Symptoms may include fever, lethargy, vomiting, and a stiff neck. Other symptoms depend on the part of the body affected. The incubation period is short, from 2 to 4 days. Antibiotic prophylaxis may be recommended when susceptible children are exposed to serotype b cases. The mode of transmission is presumably person to person, by direct contact, or through inhalation of droplets of respiratory tract secretions.

The first conjugate vaccine against Hib became available in 1987. There are currently several Hib conjugate vaccines licensed by the U.S. Food and Drug Administration. Recommendations are that all children be immunized with an approved Hib vaccine beginning at two months of age or as soon as possible thereafter. High levels of immunization among children have caused a dramatic decrease in the incidence of this disease.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *H. influenzae* from a normally sterile site (e.g., blood, cerebrospinal fluid [CSF], joint, pleural, or pericardial fluid).

### ***Surveillance Case Definition***

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a clinically compatible case with detection of *H. influenzae* type b antigen in CSF.

### ***Comment***

- Positive antigen test results from urine or serum samples are unreliable for diagnosis of *H. influenzae* disease.
- All suspected cases of *H. influenzae* type b are reportable and reviewed by the KDHE Immunization Program staff.

### ***Outbreak***

- *Haemophilus influenza (non-invasive) in Long term care facility*  
Six people in a long term care facility in Rush County were diagnosed with *H. influenza*, four of which had pneumonia and two had conjunctivitis. Two isolates were available to the Kansas Health and Environment Laboratory and were determined to be non-B type. These cases are not included in the reported 1999 cases because they did not meet the surveillance case definition for invasive disease.

\* Invasive means bacteria isolated from blood, bone, joint, pericardial fluid, peritoneal fluid, pleural fluid, or spinal fluid.

## Epidemiology and Trends

1999 Case Total	8
Kansas rate	0.3 per 100,000
U.S. rate (1998)	0.4 per 100,000

### Cases by gender

Female	4
Male	4

### Cases by geographic area

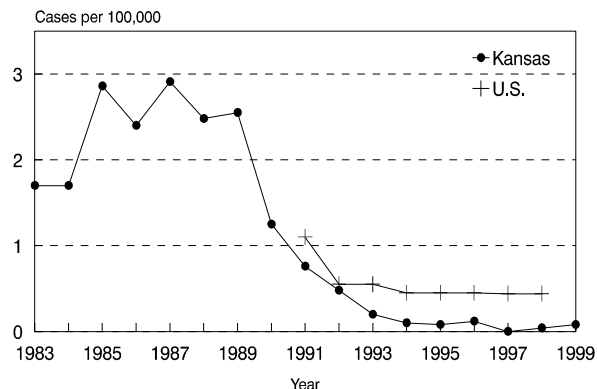
Urban	2
Rural	6

In 1999, eight invasive *Haemophilus influenzae* infections were reported in Kansas. All of the cases were specifically reported as Hib infections, including two *H. influenzae* type b meningitis cases. (No other types of invasive *H. influenzae* cases were reported in 1999.) The cases ranged in age from 8 to 87 years of age. The median age was 49 years. Seven of the cases were among people over age of 35. Four of the cases were males. Six cases were reported from rural areas. Only one case had documentation of Hib vaccination.

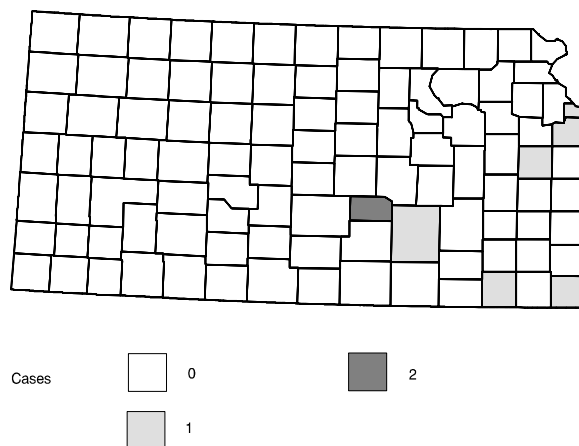
Conjugate vaccines became available in 1990 for use in infants as young as 6 weeks of age and there was an immediate and sustained decrease in the number of reported Hib cases among children in Kansas. The same pattern was seen throughout the U.S. Before introduction of the vaccine, an average of 31- 72 cases were seen annually, now 0-8 cases are reported annually in Kansas and most are in adults.

The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the third dose of the *Haemophilus influenzae* type b vaccine (Hib3) was 92.6% in 1999.

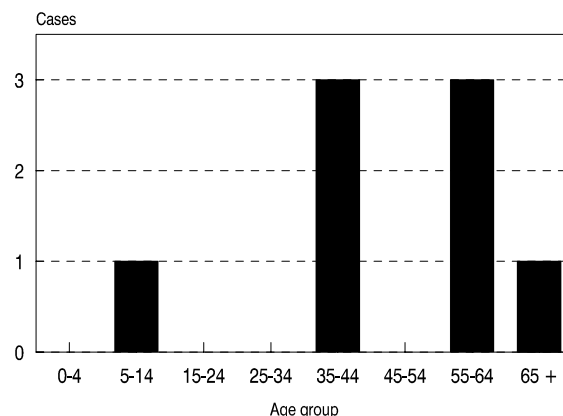
*Haemophilus influenzae* meningitis  
incidence rate by year - Kansas, 1983-1999



*Haemophilus influenzae*, invasive disease  
cases by county - Kansas, 1999



*Haemophilus influenzae*, invasive disease  
cases by age group - Kansas, 1999



## HANSEN'S DISEASE (LEPROSY)

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Leprosy is a chronic bacterial infection caused by *Mycobacterium leprae*. It is characterized by the involvement primarily of skin as well as peripheral nerves and mucosa of the upper airway. The following characteristics are typical of the major forms of the disease:

- **Tuberculoid:** One or a few well-demarcated, hypopigmented, and anesthetic skin lesions, frequently with active, spreading edges and a clearing center; peripheral nerve swelling or thickening may also occur. Cell mediated immune responses are intact.
- **Lepromatous:** A number of erythematous papules and nodules or an infiltration of the face, hands and feet with lesions in bilateral and symmetric distribution that progresses to thickening of the skin. Cell mediated immunity is greatly diminished.
- **Borderline (dimorphous):** Skin lesions characteristic of both tuberculoid and lepromatous forms.
- **Indeterminate:** Early lesions, usually hypopigmented macule, without developed tuberculoid or lepromatous features.

The incubation period ranges from 9 months to 20 years, the average probably 4 years for tuberculoid leprosy and twice that for lepromatous leprosy. The exact mode of transmission is not clearly established, however household and prolonged close contact appear to be important. Millions of bacilli are liberated daily in the nasal discharges of untreated lepromatous patients, and bacilli have been shown to remain viable for at least 7 days in dried nasal secretions. Cutaneous ulcers in lepromatous patients may also shed large numbers of bacilli. The organisms probably gain entrance through the upper respiratory tract and possibly through broken skin. In cases in children under 1 year of age, transmission is presumed to be transplacental.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Demonstration of acid-fast bacilli in skin or dermal nerve, obtained from the full-thickness skin biopsy of a lepromatous lesion.

### *Surveillance Case Definition*

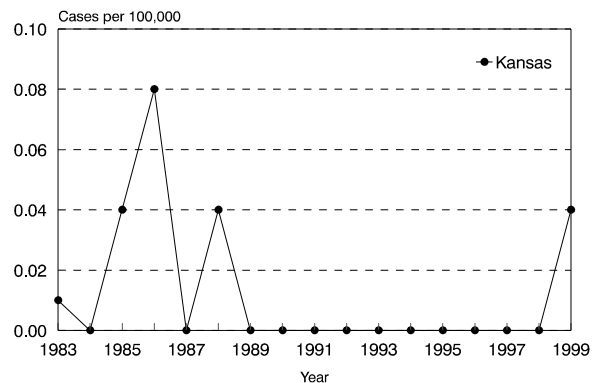
- Confirmed: a clinically compatible case that is laboratory confirmed.

### *Epidemiology and Trends*

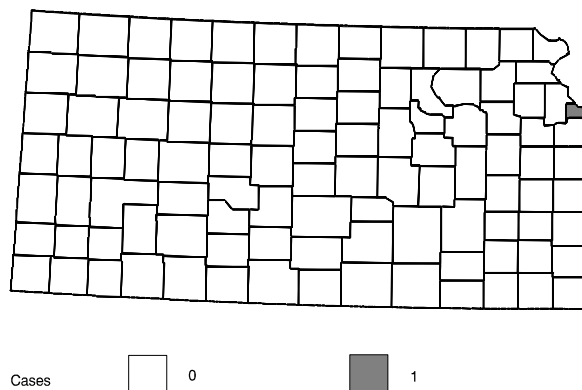
1999 Case Total      1  
 Kansas rate          <0.1 per 100,000  
 U.S. rate (1998)    0.1 per 100,000

There was one case of leprosy reported in 1999. The case was imported from a foreign country. This is the first case of leprosy confirmed in Kansas since 1988.

Leprosy incidence rate by year  
Kansas, 1983-1999



Leprosy cases by county  
Kansas, 1999





## HANTAVIRUS PULMONARY SYNDROME

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Hantavirus Pulmonary Syndrome (HPS) is seen in the U.S., and is commonly referred to as hantavirus. It is a febrile illness characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise usually requiring supplemental oxygen and clinically resembling acute respiratory disease syndrome (ARDS). The typical prodrome consists of fever, chills, myalgia, headache, and gastrointestinal symptoms. Typical clinical laboratory findings include hemoconcentration, left shift in the white blood cell count, neutrophilic leukocytosis, severe thrombocytopenia, and circulating immunoblasts. The symptoms may last a few hours to several days. The disease is caused by hantaviruses which are carried by specific rodents, in the U.S. usually it is Sin Nombre virus carried by deer mice. Mice do not appear ill while carrying the virus. People may become infected by inhaling airborne particles of urine, feces, or saliva from infected rodents. The virus may also be spread by handling infected rodents, their nests, or droppings, and then touching the person's nose, mouth, or eyes. There is no evidence of person-to-person transmission. The incubation period is one to six weeks, usually 2-3 weeks.

### ***Clinical Criteria***

An illness characterized by one or more of the following clinical features:

- A febrile illness (i.e., temperature  $>101.0^{\circ}\text{F}$  [ $>38.3^{\circ}\text{C}$ ]) characterized by bilateral diffuse interstitial edema that may radiographically resemble ARDS, with respiratory compromise requiring supplemental oxygen, developing within 72 hours of hospitalization, and occurring in a previously healthy person.
- An unexplained respiratory illness resulting in death, with an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable cause.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Detection of hantavirus-specific immunoglobulin M or rising titers of hantavirus-specific immunoglobulin G, or
- Detection of hantavirus-specific ribonucleic acid sequence by polymerase chain reaction in clinical specimens, or
- Detection of hantavirus antigen by immunohistochemistry.

### ***Surveillance Case Definition***

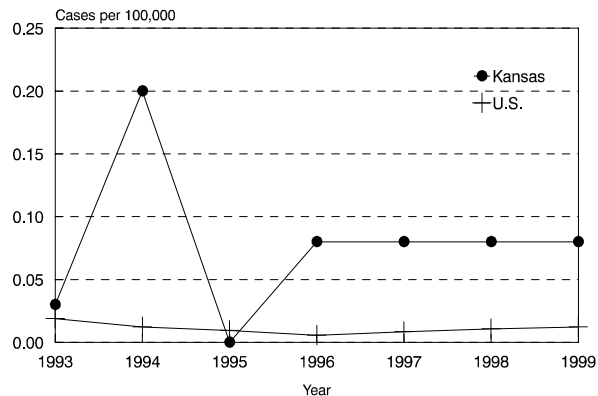
- *Confirmed:* a clinically compatible case that is laboratory confirmed.

### *Epidemiology and Trends*

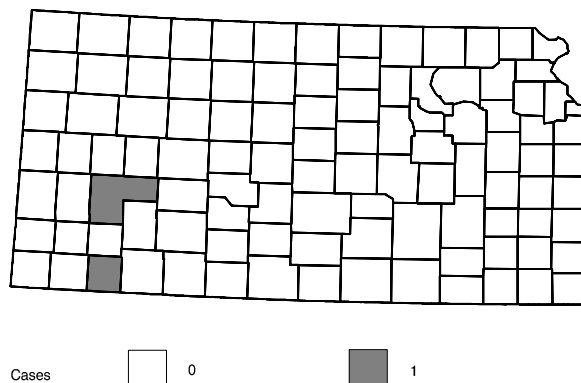
<i>1999 Case Total</i>	2
Kansas rate	0.1 per 100,000
U.S. rate (1999)	<0.1 per 100,000

Since hantavirus was first recognized in the U.S. in 1993, there have been 0-4 cases reported annually in Kansas. In 1999, there were two hantavirus cases reported with a median age of 41 years. All of the cases have lived, or worked in, southwest Kansas.

Hantavirus incidence rate by year  
Kansas, 1993-1999



Hantavirus cases by county  
Kansas, 1999



## HEPATITIS A

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Hepatitis A is caused by an RNA picornavirus that affects the liver. Onset is usually abrupt with fever, malaise, anorexia, nausea, vomiting, and abdominal discomfort, followed within a few days by jaundice. Symptoms appear, on average, one month after exposure (range 15 to 50 days). Illness lasts 1-2 weeks to several months (rare) and the length of illness depends on the clinical severity. The disease is most common among children and young adults. Severity of illness is highly variable and can be milder or asymptomatic in young children. Transmission is from person to person by the fecal-oral route. Peak levels of the agent appear in the feces a week or two before symptom onset and diminish rapidly after symptoms appear. In recent years, community-wide cases have accounted for most disease transmission, although common-source outbreaks due to food contaminated by food handlers, contaminated produce, or contaminated water continue to occur. Immunity after infection probably lasts for life.

Gamma globulin (IG) can help prevent hepatitis A if administered soon after infection, and is recommended for people who live in the same house as a person with hepatitis A, for sexual contacts of a person with hepatitis A, and for children in the same day care center with a child with hepatitis A. IG is **NOT** given to casual contacts of a person with hepatitis A because the risk of infection in these situations is extremely small. An inactivated hepatitis A vaccine is very effective in preventing infection and is recommended for travelers to countries where hepatitis A is a common infection, and for high-risk adults and children in this country. The vaccine has been shown to be safe, immunogenic and efficacious. Protection against clinical hepatitis A may begin in some persons as soon as 14 days after a single dose of vaccine and nearly all have protective antibody by 30 days.

### *Clinical Criteria*

An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive.

### *Surveillance Case Definition*

- Confirmed: (a) a case that meets the clinical case definition and is laboratory confirmed **or**  
(b) a case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (e.g., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

### *Comment*

- K.A.R. 28-1-6 requires that infected persons shall be restricted from food handling, patient care, or occupations involving the care of young children and the elderly until two weeks after the onset of illness. Blood and enteric precautions shall be followed for two weeks after the onset of symptoms.

## Epidemiology and Trends

1999 Case Total	66
Kansas rate	2.5 per 100,000
U.S. rate (1998)	8.6 per 100,000

### Rate by gender

Female	1.3 per 100,000
Male	3.6 per 100,000

### Rate by race/ethnicity

White	2.4 per 100,000
African-American	1.3 per 100,000
Hispanic	7.9 per 100,000

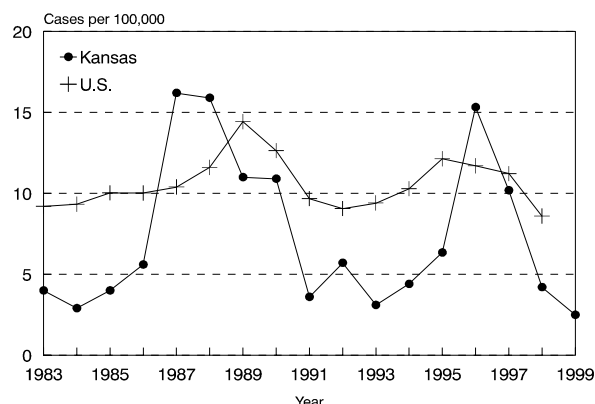
### Rate by geographic area

Urban	2.9 per 100,000
Rural	2.1 per 100,000

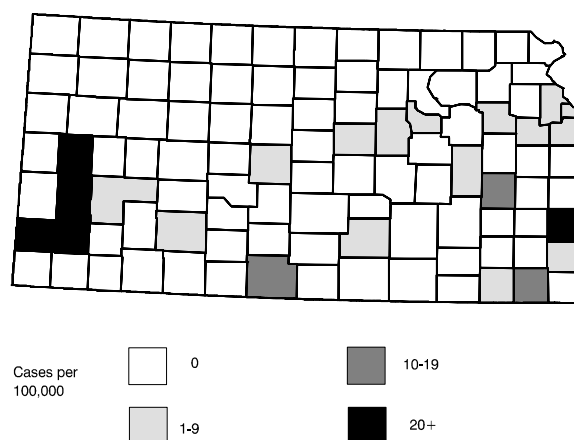
In 1999, hepatitis A incidence in Kansas decreased substantially from the previous years and were below 1984 levels, a year in which the incidence of hepatitis A was particularly low. In Kansas, epidemic cycles have been observed with peaks in 1987 and 1996. There were 66 cases reported from 23 counties in 1999. This number represented a 39% decrease compared to the 1998 total (109); the five-year median for 1994-1998 was 162 cases. The cases ranged in age from less than 1 year to 59 years of age; median age was 28 years. The highest incidence occurred in the 25-34 year age group, with rate of 6.2 per 100,000.

Eighty-six percent of the cases occurred in Whites, 17% in Hispanics, 3% in African-Americans, and in 10% of cases race was not reported. Fifty-eight percent of the cases occurred in urban areas. Risk factors identified during the 2-6 weeks prior to illness included contact with a hepatitis A case (2%), travel to foreign countries (5%), use of street drugs (5%), and eating raw shellfish (6%). Individuals may have had more than one risk factor.

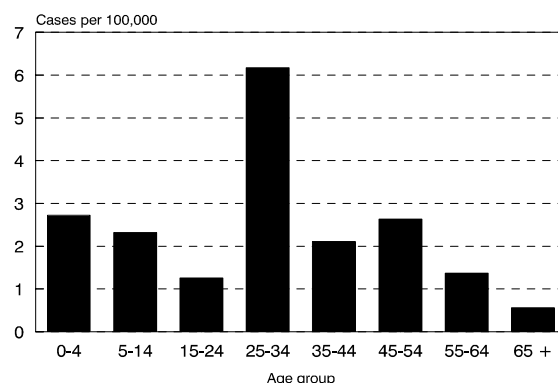
Hepatitis A incidence rate by year  
Kansas, 1983-1999



Hepatitis A rate by county  
Kansas, 1999



Hepatitis A rate by age group  
Kansas, 1999



## HEPATITIS B, ACUTE

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Hepatitis B (HBV) is a virus that affects the liver. About half of the people who are infected will have symptoms, although in many cases symptoms may be mild and not be attributed to HBV infection. The usual signs and symptoms of HBV include fever, fatigue, dark urine, muscle or joint pain, loss of appetite, nausea, vomiting, and jaundice (yellow skin and sclera). Only a small portion of infections are clinically recognized; less than 10% of children and 30-50% of adults with acute infection will have jaundice as a symptom. After infection, about 90% of people recover, develop antibodies to the virus, and cannot spread the disease to others. Five to 10 percent cannot clear the virus from their systems and become chronic carriers. Chronic carriers will usually have ongoing inflammation of the liver, continue to be infectious to others, and have an increased risk of developing severe liver disease such as cirrhosis or liver cancer. Transmission occurs via percutaneous or permucosal exposure: i.e., (1) infective blood or body fluids introduced at birth, (2) through sexual contact, or (3) by contaminated needles. Blood (and serum-derived fluids), saliva, semen, and vaginal fluids have been shown to be infectious. The incubation period is usually 45-180 days, average 60-90 days. All persons who are hepatitis B surface antigen (HBsAg) positive are potentially infectious.

Hepatitis B can be prevented by vaccination. Hepatitis B vaccine is recommended for all children at birth, 1-2 and 6-18 months of age or, if not previously received, at 11-12 years of age. Hepatitis B vaccine is also recommended for persons in the following high risk groups: persons with occupational risk, clients and staff of institutions for the developmentally disabled; hemodialysis patients; recipients of certain blood products; household and sexual partners of HBsAg carriers; international travelers visiting high prevalence areas; injecting drug users; sexually active persons with multiple partners; and inmates of long-term facilities.

### *Clinical Criteria*

An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Immunoglobulin (IgM) antibody to hepatitis B core antigen (anti-HBc) positive (if done) *or* hepatitis B surface antigen (HBsAg) positive.
- IgM anti-HAV negative (if done).

### *Surveillance Case Definition*

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

### *Comment*

- Persons who have chronic hepatitis or persons identified as HBsAg positive should not be reported as having acute viral hepatitis B unless they have evidence of an acute illness compatible with viral hepatitis B (with the exception of perinatal hepatitis B infection) or hepatitis B infection during pregnancy.
- All pregnant women should be screened for HBsAg at the earliest prenatal visit. Infants born to HbsAg (+) mothers should receive hepatitis B immune globulin (HBIG) within 12 hours of birth in addition to hepatitis B vaccine.

**NOTE:** During 1999 only acute cases of hepatitis B were reportable. All cases of viral hepatitis (acute and chronic) became reportable conditions in Kansas in 2000.

## *Epidemiology and Trends*

1999 Case Total	17
Kansas rate	0.6 per 100,000
U.S. rate (1998)	3.8 per 100,000

### *Cases by gender*

Female	6
Male	11

### *Cases by geographic area*

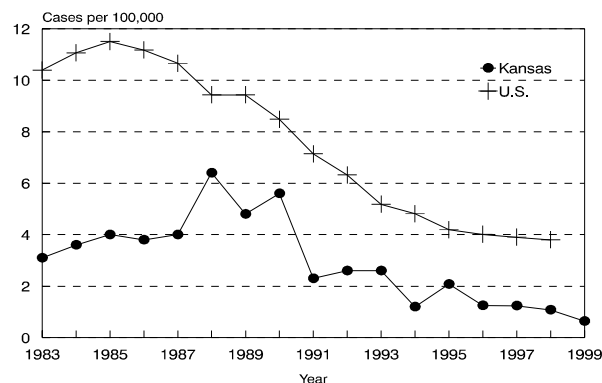
Urban	11
Rural	6

There were 17 confirmed acute hepatitis B cases reported in 1999, a 39% decrease as compared to the 28 cases in 1998; the five-year median for 1994-1998 was 32 cases. The cases ranged in age from 17 to 59 years of age. The median age was 28 years. Eleven cases (65%) were males. The largest number of hepatitis B cases occurred in the 25-34 year age group. Sixty-five percent of the cases were reported from urban areas.

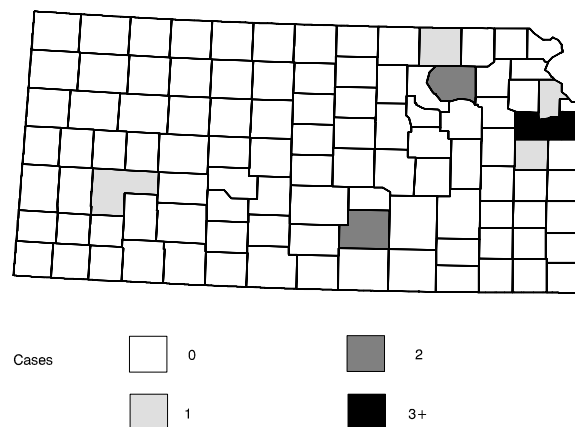
Risk factors identified from 2 weeks to 6 months prior to illness included having more than 2 sexual partners (17%), and dental work (17%). Individuals may have had more than one risk factor.

There has been a steady decrease in reported cases of acute hepatitis B since 1989, when a vaccine became available. The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the third dose of the hepatitis B vaccine was 92% in 1999.

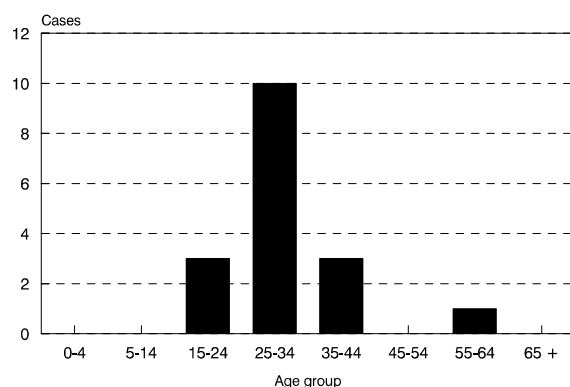
Acute hepatitis B incidence rate by year  
Kansas, 1983-1999



Acute hepatitis B cases by county  
Kansas, 1999



Acute hepatitis B cases by age group  
Kansas, 1999



## HEPATITIS C/ *non-A, non-B*, ACUTE

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Hepatitis C is a liver disease caused by a flavavirus. It is an illness with insidious onset of symptoms, including anorexia, abdominal discomfort, nausea, vomiting, and progressing to jaundice less frequently than hepatitis B (75% of infected individuals do not have jaundice). Chronic infection is common (>60% of cases) and can be symptomatic or asymptomatic. Prior to blood donor screening for this infection, hepatitis C occurred most often in people who had received blood transfusions. More recently, hemodialysis patients and persons who have shared needles have been most affected. The incubation period ranges from 2 weeks to 6 months; most commonly 6-9 weeks. It is spread primarily by exchange of contaminated blood with an infected person, such as through a blood transfusion or sharing needles. The risk of sexual transmission has not been thoroughly studied but appears to be less than 5%, similar to perinatal infection.

Up to 20% of acute hepatitis cases have no detectable antibody to hepatitis C virus (anti-HCV) when reported and are classified as non-A, non-B hepatitis. Some (5%-10%) have not yet seroconverted to hepatitis C and others (5-10%) remain negative even with prolonged follow-up.

### ***Clinical Criteria***

An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Serum aminotranferase levels > 2.5 times the upper limit of normal, **and**
- Immunoglobulin M (IgM) anti-HAV negative **and**
- IgM anti-HBc negative, **and**

### **For Hepatitis C:**

- Antibody to hepatitis C virus (anti-HCV) positive, **verified by a supplemental test**; supplemental tests include RIBA (Recombinant ImmunoBlot Assay), or RT-PCR (Reverse Transcriptase Polymerase Chain Reaction).

### **For Non-A, Non-B Hepatitis:**

- Anti-HCV negative (if done).

### ***Surveillance Case Definition***

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

### ***Comment***

- Available serologic tests for anti-HCV do not distinguish between acute and chronic (current and past) infection. Thus, other causes of acute hepatitis should be excluded for anti-HCV positive patients who have an acute illness compatible with viral hepatitis.

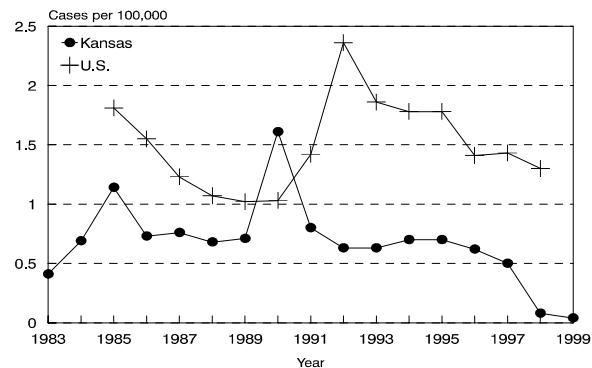
**NOTE:** All cases of viral hepatitis (acute and chronic) became reportable conditions in Kansas in 2000.

### *Epidemiology and Trends*

1999 Case Total	1
Kansas rate	<0.1 per 100,000
U.S. rate (1998)	1.3 per 100,000

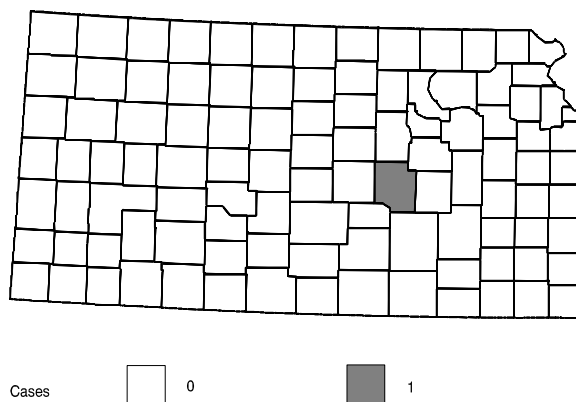
In Kansas, there was only one confirmed acute hepatitis C/ *non-A, non-B* case reported in 1999. Since only acute cases were reportable in 1999, these numbers are not indicative of the burden of disease. Up to 90% acute hepatitis C cases become chronic carriers who are able to continue to transmit the disease and likely to have adverse sequelae needing additional health care. In 2000, both acute and chronic hepatitis C cases are reportable.

Acute hepatitis C incidence rate by year  
Kansas, 1983-1999



Comment: The decrease in reported cases of acute viral hepatitis C may reflect a change in case definition in 1996, which requires a supplemental verification test.

Acute hepatitis C cases by county  
Kansas, 1999





## HEPATITIS D (Delta)

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The hepatitis D virus (HDV) or Delta agent is an independent infective agent that it can only cause illness in the presence of the hepatitis B virus. Onset is usually abrupt, with signs and symptoms resembling those of hepatitis B. The disease may be severe and is always associated with a coexistent hepatitis B virus infection. Delta hepatitis may be self-limiting or it may progress to chronic hepatitis. Children may have particularly severe clinical course with usual progression to chronic active hepatitis. The incubation period is an approximately 2-8 weeks. The mode of transmission is thought to be similar to that of HBV -- by exposure to infected blood and serous body fluids, contaminated needles, syringes and plasma derivatives such as antihemophilic factor, and through sexual transmission.

### *Clinical Criteria*

An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Hepatitis B surface antigen (HbsAg) *or* immunoglobulin (IgM) antibody to hepatitis B core antigen positive **and** antibody to hepatitis delta virus positive.

### *Surveillance Case Definition*

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

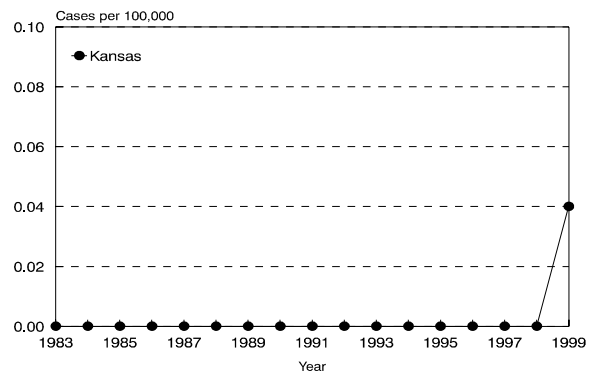
**NOTE:** All cases of viral hepatitis (acute and chronic) became reportable conditions in Kansas in 2000.

### *Epidemiology and Trends*

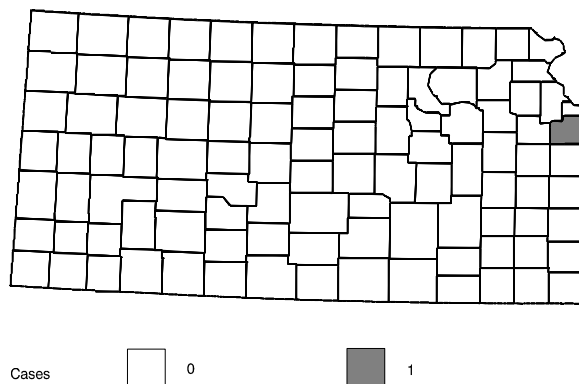
1999 Case Total	1
Kansas rate	<0.1 per 100,000
U.S. rate	N/A

In Kansas, there was one confirmed acute hepatitis D case reported in 1999. This was the first case of hepatitis D reported in Kansas and the individual was also reported with hepatitis B.

Hepatitis D incidence rates by year  
Kansas, 1983-1999



Hepatitis D cases by county  
Kansas, 1999



## INFLUENZA

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Influenza, more commonly called “flu,” is a highly contagious viral infection of the nose, throat, bronchial tubes and lungs. There are two main types of virus - A and B. Each type includes many different strains which tend to change each year. Influenza occurs most often in the winter months. Illnesses resembling influenza may occur in the summer months but they are usually due to other viruses. Typical flu symptoms include headache, fever, chills, cough, and body aches. Intestinal symptoms are uncommon and are not included in the definition of a clinical case. Although most people are ill for only a few days, some people have a more serious illness, such as pneumonia, and may need to be hospitalized. Thousands of people die each year in the United States from the flu or related complications. Anyone can get influenza, but the disease is most serious in the elderly, or in people with chronic illnesses such as cancer, emphysema, diabetes, or weak immune systems. The incubation period is short, usually 1-3 days. Influenza is highly contagious and is easily transmitted through contact with droplets from the nose and throat of an infected person during coughing and sneezing.

Influenza vaccination is available to reduce the likelihood of infection or lessen the severity of the disease. Immunity to one strain of the influenza virus does not confer immunity to other strains. Consequently, the three strains included in the vaccine vary from year to year depending on strains expected to be in circulation for that season. Annual vaccination for influenza is also necessary because immunity declines rapidly over time. People should be vaccinated before influenza is seen in the community, which, in the United States, is from November through March. Thus, beginning each September, influenza vaccine should be offered to high-risk individuals when seen for routine care or when hospitalized. Organized vaccination campaigns are usually held from October through mid-November.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Isolation of influenza virus from a throat specimen.

### *Surveillance Case Definition*

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

### *Comment*

- During the 1999-2000 influenza season, sentinel physician-based influenza surveillance was conducted in cooperation with the CDC. Fourteen physicians, a university student center, and two hospitals volunteered to be sentinel physicians/sites. Each week sentinel sites were contacted by telephone to determine the number of patients seen with influenza-like-illness by four age groups and total patient visits for all reasons. Participants were asked to report these figures to CDC via telephone or internet. Influenza-like-illness is defined as fever ( $\geq 100^\circ\text{F}$  [ $37.8^\circ\text{C}$ ], oral or equivalent) AND cough or sore throat (in absence of a known cause). Physicians were also asked to collect pharyngeal swabs from patients presenting with influenza-like-illness and send them to the Kansas Health and Environmental Laboratory (KHEL). The KHEL conducted viral isolation and identification by influenza type and subtype. Aggregate information from Kansas was sent weekly to the CDC.
- **Influenza strains contained in the 2000-2001 vaccine:** The trivalent influenza vaccine prepared for the 2000-2001 season will include A/Moscow/10/99 (H3N2)-like, A/new Caledonia/20/99 (H1N1)-like, and B/Beijing/184/93-like strains. The 1999-2000 strains were A/Sydney/5/97 (H3N2)-like, A/Beijing/262/95 (H1N1)-like and B/Beijing/184/93-like strains.

## Epidemiology and Trends

During the 1999-2000 influenza season, the trends observed in Kansas were reflected in much of the U.S., with increasing flu-like activity occurring in late December and peaking during early and mid January, 2000.

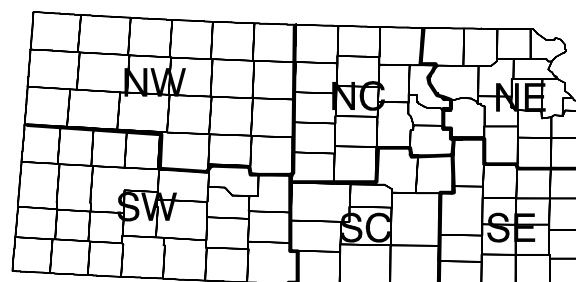
There were 145 specimens tested at the KHEL with 48 testing positive as of May 8, 2000. There were fewer positive specimens cultured compared to previous years. Of the 48 positive specimens, 47 (98%) were type A, with 38 subtyped as H3N2; 1 (2%) was type B, subtyped as BE93. Both identified strains were included in this year's vaccine.

During this influenza season, January showed the highest percentage of deaths due to pneumonia/influenza. Ninety-one percent (1,364/1,497) of deaths due to pneumonia/influenza during this period were among people aged 65 and over.

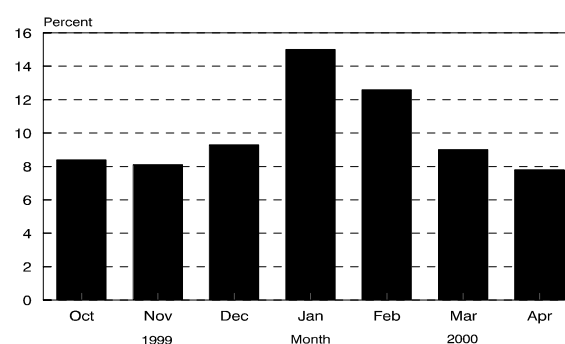
<b>Test results* for influenza</b>	
Analyzed for influenza	<b>145</b>
Influenza A (+)	<b>47</b>
Typed (all H3N2)	38
Fluorescent antibody (+)	9
Influenza B (+)	<b>1</b>
Typed (all BE93)	1
Fluorescent antibody (+)	0
Influenza (-)	<b>89</b>
Other viruses	<b>5</b>
Adenovirus	1
Herpes simplex virus	2
Parainfluenza	1
Enterovirus	1
Contamination	<b>3</b>

\* Only results from specimens submitted to the KHEL are presented.

Geographic regions in Kansas



Percent of deaths due to pneumonia and influenza, October, 1999 - April, 2000, Kansas



Total deaths (October, 1999 - April, 2000) = 14,232

Geographic Area (# Spec. analyzed)	Pos A		Pos B	
	N	(%)	N	(%)
NE (82)	19	(23%)	0	(0%)
NC (13)	1	(8%)	0	(0%)
NW (3)	2	(67%)	0	(0%)
SE (9)	6	(67%)	0	(0%)
SC (36)	18	(50%)	1	(3%)
SW (2)	1	(50%)	0	(0%)
Total (145)	47	(32%)	1	(<1%)

Age group	Specimens analyzed	Pos A N (%)	Pos B N (%)
< 12	14	3 (21%)	1 (7%)
12 - 19	20	5 (25%)	0 (0%)
20 - 39	67	22 (33%)	0 (0%)
> 39	44	17 (39%)	0 (0%)
Total	145	47 (32%)	30 (<1%)

## PEDIATRIC LEAD POISONING

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Although not an infectious disease, lead poisoning is one of the most common and preventable pediatric health problems affecting Kansas children. In young children, lead levels above 10  $\mu\text{g}/\text{dL}$  can affect the developing nervous system, resulting in delayed development, decreased IQ, and learning and behavior problems. Higher lead levels (greater than 20  $\mu\text{g}/\text{dL}$ ) can have adverse effects on the kidneys and blood-producing organs as well as the digestive and reproductive systems. Very high blood lead levels (greater than 70  $\mu\text{g}/\text{dL}$ ) can cause devastating health consequences, including seizures, coma, and death. The developing fetus is very susceptible to the lead exposure and blood lead levels of the mother. Children under six years most often become lead-poisoned by ingesting lead contaminated dust through the frequent hand-to-mouth activity typical of this age group such as thumb-sucking, or chewing on toys, pacifiers and other objects that have been in contact with dust and soil. Lead-based paint in homes built before 1978 is the most common source of lead exposure for children when painted surfaces are peeling, deteriorating, or disturbed during renovation or remodeling. Other potential sources of lead poisoning include water from leaded pipes, occupational or hobby exposure of the parent, soil contaminated from previous industry and leaded gas emissions, and food contaminated by imported dishes or cans containing lead. Children are considered to be at high risk for lead poisoning if they:

- Live in or regularly visit a house that was built before 1950.
- Live in or regularly visit a house built before 1978 with recent or ongoing renovations or remodeling (within the last six months).
- Have a sibling or playmate who has or did have lead poisoning.
- Live with an adult with occupational or recreational exposure to lead.

The common warning signs of lead poisoning such as headache, stomachache, fatigue, loss of appetite or sleep disturbance, can easily be mistaken for common childhood problems. Most children have no symptoms of lead poisoning until the blood lead levels are very high. A blood lead test is the only way to tell if a child has an elevated blood level and is recommended as part of standard pediatric check-ups. Blood lead testing is mandated as part of the Kan Be Healthy health assessment for children under six receiving Medicaid benefits.

Based on 1998 CDC guidelines, Kansas has a universal screening recommendation: Using a blood lead test, screen all children at 12 and 24 months of age, and screen all children from 36-72 months of age who have not been screened previously. High risk children should have a first blood lead test at six months of age.

Intervention activities should be triggered by blood lead levels  $\geq 10 \mu\text{g}/\text{dL}$ . Children with blood lead levels  $\geq 15 \mu\text{g}/\text{dL}$  should receive individual case management, including nutritional and educational interventions and more frequent screening. Medical evaluation and environmental investigation and remediation should be done for all children with blood levels  $\geq 20 \mu\text{g}/\text{dL}$ .

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Venous blood lead level  $\geq 10 \mu\text{g}/\text{dL}$ , ***or***
- Capillary blood lead results  $\geq 10 \mu\text{g}/\text{dL}$  confirmed by retesting with venous blood.

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.

## Epidemiology and Trends

1999 Case Total	770
Kansas rate (age-specific)	298.6 per 100,000
U.S. rate	N/A

### Rate by gender

Female	237.4 per 100,000
Male	350.6 per 100,000

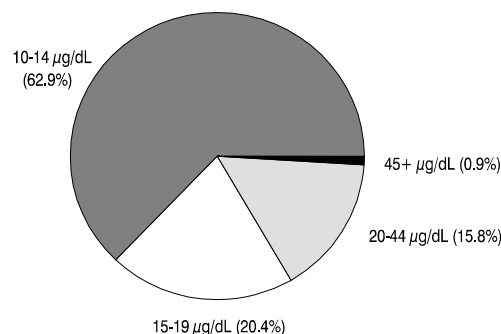
### Rate by geographic area

Urban	233.1 per 100,000
Rural	367.1 per 100,000

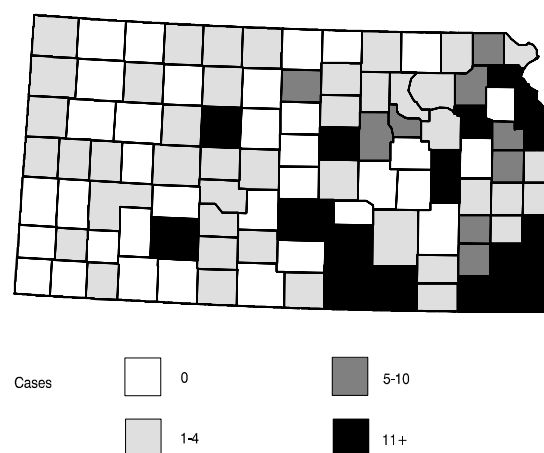
The number of pediatric lead poisoning cases reported decreased by 14% from 892 cases in 1998 to 770 cases in 1999. The decrease may be due to a reduction in the level of screening, screening of a greater proportion of low risk children by public providers, or an actual reduction in the incidence of elevated blood lead levels among Kansas children. Cases reported by the Kansas Health and Environmental Laboratory (children screened by Local Health Departments) have decreased by 18% reflecting a documented 13% decrease in the total number of children screened by KHEL. Results on both positive and negative specimens analyzed by KHEL are available, with a positive rate of 7.0%. Cases reported by private laboratories have decreased by 18%. In 1999, the ratio of cases reported by KHEL to those reported by private labs was 1:2. Since only positive results are available from private laboratories, it is not possible to assess positivity rates of this population. Of the cases reported, 510 (66%) were from private laboratories.

Reported cases have remained consistent in the distribution of percentages of cases for each value range for the years 1994-1999. In 1999, 129 cases (16.7%) had a blood lead level  $\geq 20 \mu\text{g/dL}$ , a level that might warrant an environmental risk assessment. The pediatric cases ranged in age from 0 to 72 months. The median age was 27 months. The 12-23 month age group accounted for 23% of the reported cases and represented the highest incidence and highest blood lead levels of pediatric poisoning. Males comprised 61% of the reported cases. Distribution of cases by race/ethnicity was not available. The ratio of urban to rural was about 1:1.6. *Differences in the number of cases by geographic area may be attributable to variations in screening practices.*

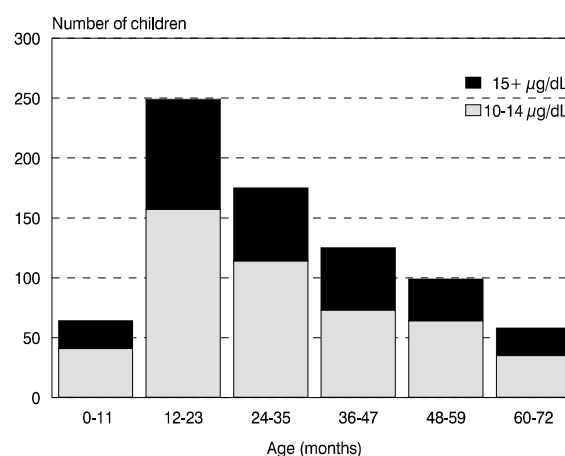
Positive Blood lead results for children 0 to 72 months  
Kansas, 1999



Pediatric lead poisoning cases by county  
Kansas, 1999



Pediatric lead poisoning cases by age group  
Kansas, 1999



## LEGIONELLOSIS

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Legionellosis is a bacterial disease caused by Gram-negative bacilli, *Legionellae*. Legionellosis is associated with two clinically and epidemiologically distinct illnesses: Legionnaires disease, which is characterized by fever, myalgia, cough, and pneumonia and Pontiac fever, a milder illness without pneumonia. It is called legionellosis because of an outbreak of this disease in Philadelphia in 1976, largely among people attending a state convention of the American Legion. Subsequently, the bacterium causing the illness was named *Legionella pneumophila*. The incubation period is 2-10 days, most often 5-6 days for Legionnaire's disease; 24-48 hours for Pontiac fever. *Legionella spp.* are widely distributed in the environment. They have been found in creeks and ponds, hot and cold water taps, hot water tanks, water in air conditioning cooling towers and evaporative condensers, and soil at excavation sites. The disease appears to be spread through the air from a soil or water source; other modes are possible, but none has been proven conclusively. All studies to date have shown that person-to-person spread does not occur and underlying illness often plays a role. Most cases have been sporadic occurrences, but outbreaks do occur.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluids, ***or***
- Demonstration of a fourfold or greater rise in the reciprocal immunofluorescence antibody (IFA) titer to  $\geq 128$  against *Legionella pneumophila* serogroup 1 between paired acute-and convalescent-phase serum specimens, ***or***
- Detection of *L. pneumophila* serogroup 1 in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody testing, ***or***
- Demonstration of *L. pneumophila* serogroup 1 antigens in urine by radioimmunoassay or enzyme-linked immunosorbent assay.

### ***Surveillance Case Definition***

- Confirmed: a clinically compatible case that is laboratory confirmed.

### ***Comment***

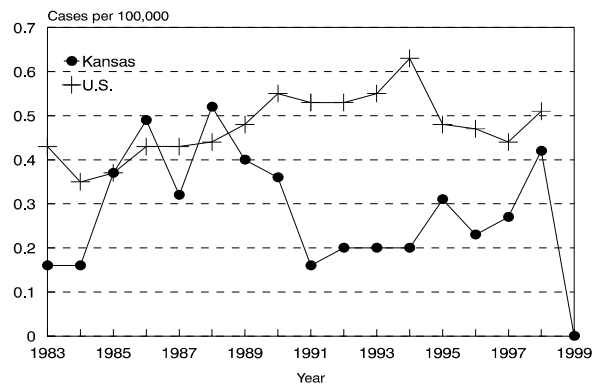
- The previously used category of "probable case," which was based on a single IFA titer, lacks specificity for surveillance and is no longer used.

### *Epidemiology and Trends*

1999 Case Total        0  
 U.S. rate (1998)      0.5 per 100,000

There were no reported Legionellosis cases in 1999. Since 1991, there have been 4-11 cases reported annually in the state.

Legionellosis incidence rate by year  
 Kansas, 1983-1999





## LYME DISEASE

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Lyme disease is a bacterial infection caused by the spirochete, *Borrelia burgdorferi*. The first cluster of disease cases associated with this bacteria was discovered near Lyme, Connecticut. Lyme disease may cause symptoms affecting skin, nervous system, heart and/or joints of an individual, but it is almost never fatal. A systemic, tickborne disease, it is often multistage. The best clinical marker for the disease is the initial skin lesion (i.e., erythema migrans [EM]) that occurs in 60%-80% of patients 3 to 32 days after tick exposure. However, the early stages of the illness may be asymptomatic, and the patient may present with later manifestations. The infection is transmitted by very small ticks, the most important being the deer tick (*Ixodes scapularis*) and the western black-legged tick (*Ixodes pacificus*). Transmission does not occur until the tick has been attached for 24 hours or more.

A Lyme disease vaccine is recommended for persons exposed in high risk areas (counties where *Ixodes* populations are established, prevalence of infection is high and which are in the top 10% of counties reporting human cases; limited to the Northeast U.S. and parts of Minnesota and Wisconsin). Kansas is in a minimal to low risk area, so vaccine is not recommended. A vaccine is licensed for non-pregnant persons aged 15-70 years.

### *Clinical Criteria*

#### **Erythema Migrans (EM)**

EM is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach  $\geq 5$  cm in size. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and are not EM. For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.

#### **Late manifestations**

##### 1. *Musculoskeletal system*

Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.

##### 2. *Nervous system*

Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *B. burgdorferi* in the CSF, evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone are not criteria for neurologic involvement.

##### 3. *Cardiovascular system*

Acute onset of high-grade (2° or 3°) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch

block, or myocarditis alone are not criteria for cardiovascular involvement.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Borrelia burgdorferi* from a clinical specimen *or*
- Demonstration diagnostic immunoglobulin M or immunoglobulin G antibodies to *B burgdorferi* in serum or cerebrospinal fluid (CSF). A two-test approach using a sensitive enzyme immunoassay or immunofluorescence antibody followed by Western blot is recommended.

### ***Surveillance Case Definition***

- Confirmed: a) a case with EM *or*  
b) a case with at least one late manifestation that is laboratory confirmed.

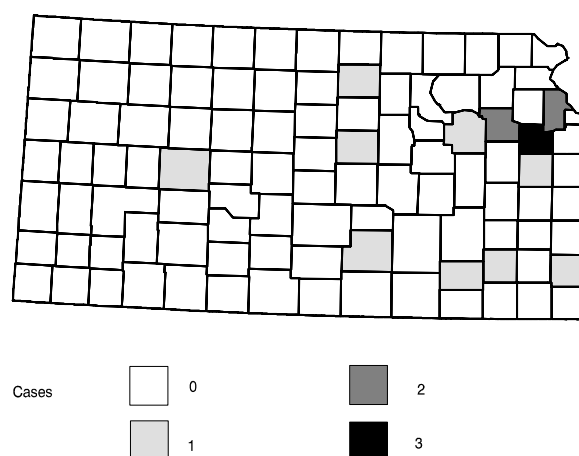
**NOTE:** The spirochete (*Borrelia burgdorferi*) that causes Lyme disease has never been isolated by culture in Kansas.

### ***Epidemiology and Trends***

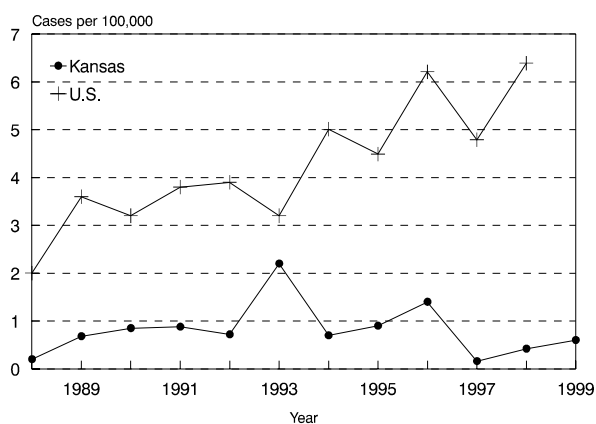
1999 Case Total	16
Kansas rate	0.6 per 100,000
U.S. rate (1998)	6.4 per 100,000
Connecticut rate (1999)	98 per 100,000
(highest state rate in U.S.)	

In 1999, there were 16 cases of Lyme disease reported. The cases ranged in age from 10-70 years of age (median=36). Ten of the cases were female. Ten cases were reported from rural areas. Two cases (13%) had EM, 3 cases (19%) had rheumatic signs, two case (13%) had neurologic signs, and no case reported having cardiac signs.

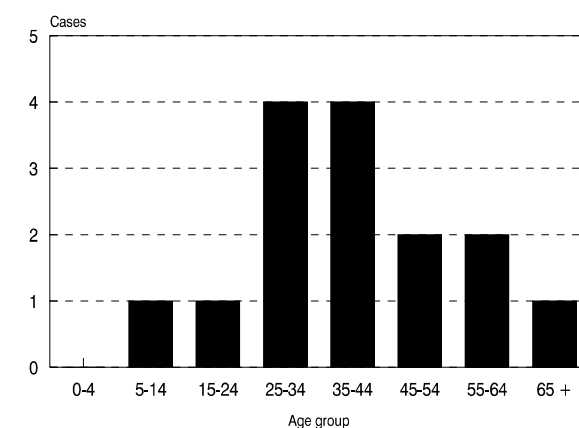
Lyme disease cases by county  
Kansas, 1999



Lyme disease incidence rate by year  
Kansas, 1988-1999



Lyme disease cases by age group  
Kansas, 1999



## MALARIA

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Malaria is a parasitic infection caused by *Plasmodium vivax*, *P. ovale*, *P. malariae*, or *P. falciparum*. Signs and symptoms are variable; however, most patients experience fever. In addition to fever, commonly associated symptoms include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhea, and cough. Untreated *P. falciparum* infection can lead to coma, renal failure, pulmonary edema, and death. The diagnosis of malaria should be considered for any person who has these symptoms and who has traveled to an area in which malaria is endemic. Asymptomatic parasitemia can occur among persons who have been long-term residents of areas in which malaria is endemic. The time between the infective bite and the appearance of clinical symptoms is 7-14 days for *P. falciparum*, 8-14 days for *P. vivax* and *P. ovale*, and 7-30 days for *P. malariae*. With some strains of *P. vivax* and *P. ovale* from temperate areas, there may be a protracted incubation period of 8-10 months or longer. Malaria is spread through the bite of an infective female *Anopheles spp.* mosquito. Most species feed at dusk and during early night hours; some important vectors have biting peaks around midnight or the early hours of the morning.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Demonstration of malaria parasites in blood films.

### ***Surveillance Case Definition***

- *Confirmed*: an episode of microscopically confirmed malaria parasitemia in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

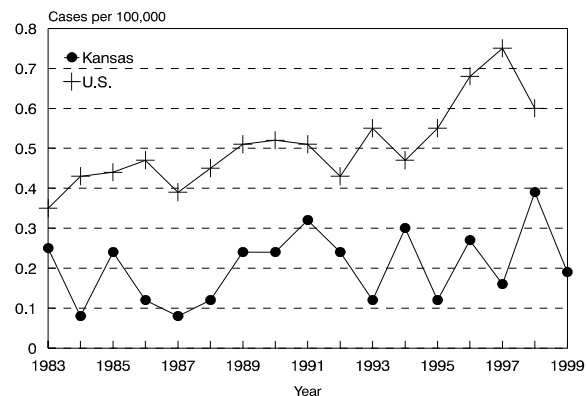
### ***Comment***

- A subsequent attack experienced by the same person but caused by a different *Plasmodium spp.* is counted as an additional case. A subsequent attack experienced by the same person and caused by the same species in the United States may indicate a relapsing infection or treatment failure caused by drug resistance.
- K.A.R. 28-1-6 requires that blood precautions shall be followed for the duration of hospitalization.

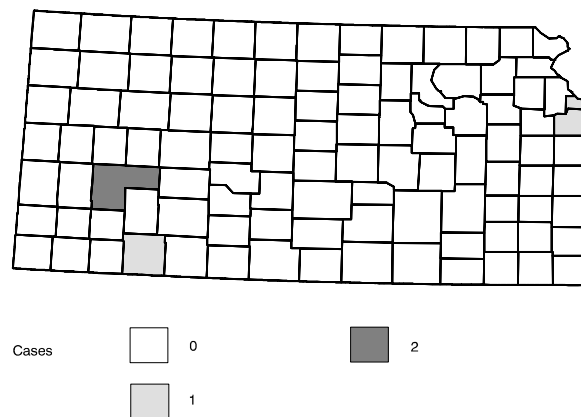
### Cases by gender

### Cases by geographic area

Malaria incidence rate by year  
Kansas, 1983-1999

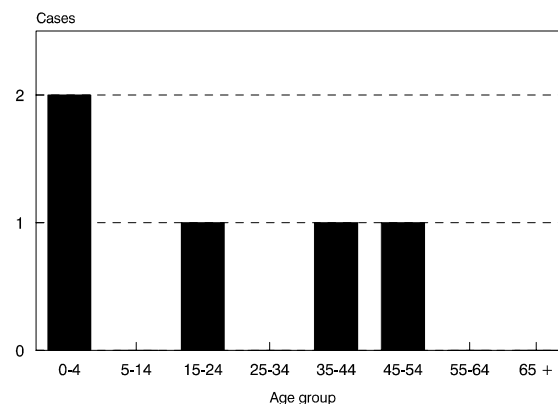


Malaria cases by county  
Kansas, 1999



Eighty percent of isolates were speciated. The following species of malaria were identified in cases: *P. falciparum* (3), *P. vivax* (1), and undetermined (1). One case had taken malaria prophylaxis with chloroquine.

Malaria cases by age group  
Kansas, 1999



## MEASLES (Rubeola)

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Measles is an extremely contagious viral disease caused by measles virus, a member of the family *Paramyxoviridae*, that can be prevented by vaccination. Measles causes a rash, sometimes with mild itching, and is always accompanied by fever and a hacking cough and sometimes by eye sensitivity to light. The fever usually subsides in 3 to 5 days, and patients are contagious 1-2 days before the onset of symptoms to 4 days after the rash appears. The vast majority of children recover completely from measles, but serious complications can occur. These include pneumonia, ear infection, and encephalitis (inflammation of the brain). Measles encephalitis may cause permanent brain damage and can occasionally result in death. The incubation period is about 10 days, varying from 7 to 18 days from exposure to onset of fever, usually 14 days until rash appears. It is spread through the air by droplets from the nose, throat, and mouth of an infected person.

The vaccine is available as a single antigen preparation, combined with rubella vaccine, or combined with mumps and rubella vaccines. The current recommendation in the USA is a routine 2-dose measles vaccine schedule, with the initial dose administered at 12-15 months of age. The second dose should be given at school entry (4-6 years of age). Both doses should generally be given as combined measles-mumps-rubella vaccine (MMR).

### ***Laboratory Criteria for Confirmation***

- Positive serologic test for measles immunoglobulin M antibody, ***or***
- Significant rise in measles antibody level by any serologic assay, ***or***
- Isolation of measles virus from a clinical specimen

### ***Surveillance Case Definition***

An illness characterized by all the following:

- (a) a generalized rash lasting  $\geq 3$  days
- (b) a temperature  $\geq 101.0$  °F ( $\geq 38.3$  °C)
- (c) cough, coryza, or conjunctivitis

- *Confirmed*: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed case. A laboratory -confirmed case does not need to meet the clinical case definition.
- *Probable*: a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed case.
- *Suspected*: any febrile illness accompanied by rash.

### ***Comment***

- All suspected cases of measles are reportable and reviewed by the KDHE Immunization Program staff.
- K.A.R. 28-1-6 requires that respiratory isolation should be instituted for four days after the onset of rash.

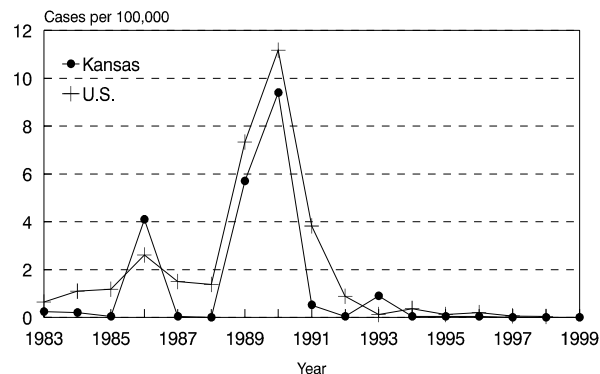
### *Epidemiology and Trends*

1999 Case Total        0  
 U.S. rate (1998)      <0.1 per 100,000

There were no reported measles cases in 1999. Since 1992, there have been 0-2 cases reported annually in the state.

The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the first dose of the measles, mumps, and rubella vaccine (MMR1) was 91.7% in 1999.

Measles incidence rate by year  
 Kansas, 1983-1999



## **MENINGITIS, BACTERIAL**

### **(non-meningococcal, non-*Haemophilus influenzae* type B)**

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Bacterial meningitis is a generic term defined as inflammation of the membranes of the spinal cord or brain caused by bacteria that reach the meninges via blood or lymph through trauma, or from adjacent body structures (e.g. sinuses, mastoid cells). For the purpose of this document bacterial meningitis is defined as a group of diseases characterized by infection of the meninges caused by a bacteria other than *Neisseria meningitidis* or *Haemophilus influenzae* type b, and excludes aseptic meningitis.\* Symptoms can include fever, headache, stiff neck, vomiting, and red rash. The incubation period ranges from 2 to 10 days. Mode of transmission is by direct person-to-person contact, including respiratory droplets from nose and throat of infected people. No post-exposure prophylaxis of contacts is generally recommended.

#### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation and identification of a bacterial pathogen from the CSF or blood.

#### ***Surveillance Case Definition***

- *Confirmed:* a clinically compatible case that is laboratory confirmed or has a positive blood culture.

#### ***Comment***

- Kansas laws require that isolates be sent to the Kansas Health and Environmental Laboratory for serotyping.
- K.A.R. 28-1-6 requires that infected persons shall be isolated until the end of the febrile period.

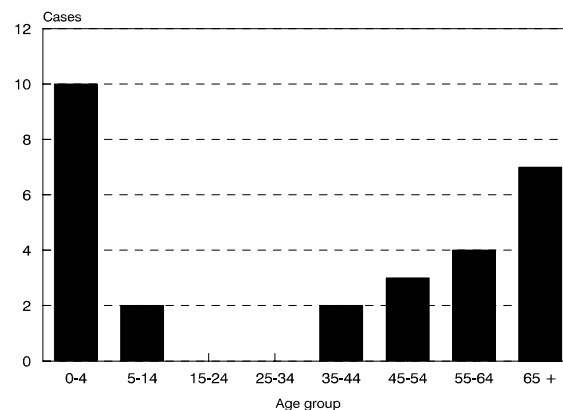
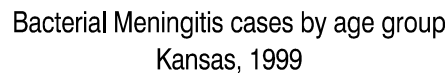
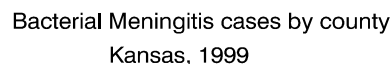
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\* Viral (aseptic) meningitis is not reportable in Kansas.

### Cases by gender

### Cases by geographic area

Bacterial Meningitis incidence rate by year  
Kansas, 1989-1999





## MENINGOCOCCAL DISEASE

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Meningococcal disease is an acute bacterial disease caused by *Neisseria meningitidis*, a Gram-negative diplococcus. The most common serogroups of *N. meningitidis* in the U.S. are B, C, W-135, and Y. Late winter to early spring is the peak season for infection, but this can occur at any time of the year. Even with early diagnosis and appropriate treatment, the fatality rate of meningococcal meningitis is 5-15%. The disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminans, shock, and death. The disease is characterized by sudden onset with fever, intense headache, nausea and often vomiting, and stiff neck. Up to 5%-10% of populations may carry *N. meningitidis* in the nasopharynx without developing invasive disease, while a few develop bacteremia, sepsis, meningitis, or pneumonia. The incubation period ranges from two to 10 days, usually three to four days. Transmission of *N. meningitidis* is from person to person by direct contact with respiratory droplets from the nose and throat of infected people. A vaccine is available for use in outbreaks if A, C, Y or W-135 serogroups are implicated. There is no vaccine for serogroup B, responsible for 20-30% of reported cases in Kansas. Chemoprophylaxis is used for close contacts of cases (e.g., household members, intimate contacts, health care personnel performing mouth-to-mouth resuscitation, day care center play-mates). No chemoprophylaxis is recommended for less intimate contacts (e.g., school mates, health care workers with minimal contact, and etc.) except during an outbreak or in a child care center.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Neisseria meningitidis* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, joint, pleural, or pericardial fluid).

### ***Surveillance Case Definition***

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a case with a positive antigen test in CSF or clinical purpura fulminans in the absence of a positive blood culture.

### ***Comment***

- Positive antigen test results from urine or serum samples are unreliable for diagnosing meningococcal disease.
- K.A.R. 28-1-6 requires that respiratory isolation shall be instituted for 24 hours after initiation of antibiotic therapy.

**Note:** In 1999, Advisory Committee on Immunization Practices has modified its guidelines for use of the meningococcal vaccine, particularly for college freshman who live in dormitories. This group has been found to be at modestly increased risk relative to other persons their age. The recommendation is that those who provide medical care for this group give information to students and their parents about meningococcal disease and the benefits of vaccine. Vaccine should be made easily available to those who wish to reduce their risk of meningococcal disease.

## *Epidemiology and Trends*

<i>1999 Case Total</i>	23
Kansas rate	0.9 per 100,000
U.S. rate (1998)	1.0 per 100,000

### *Cases by gender*

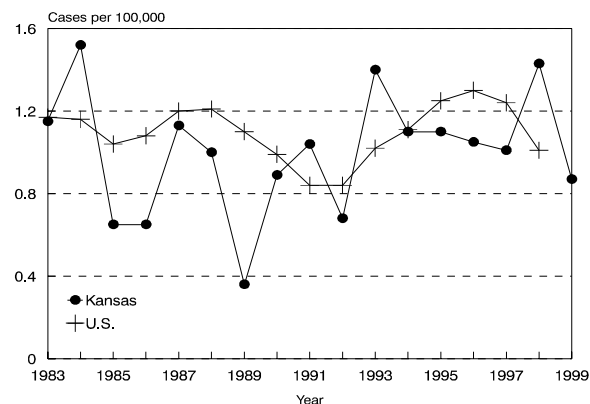
Female	16
Male	7

### *Cases by geographic area*

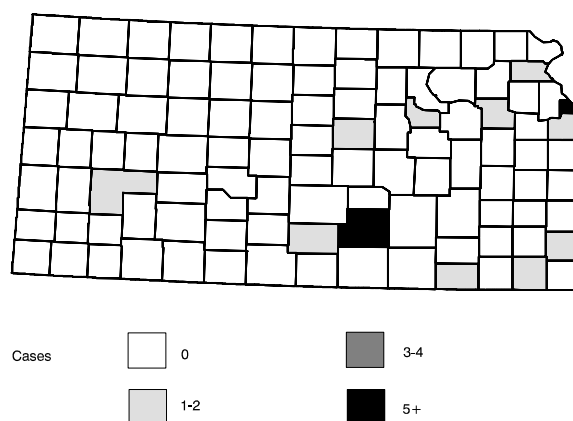
Urban	14
Rural	9

Thirty-three meningococcal meningitis were reported during 1999, similar to the number of cases reported in recent years. These were sporadic cases; no outbreaks were detected. The five-year median for 1994-1998 was 28 cases. The cases ranged in age from less than 1 to 95 years of age. The median age was 49 years. Fourteen (61%) of the cases were reported from urban areas and 16 (70%) cases were female. There were no reported cases among college students. Serogroups among the 21 isolates available were Y (9), C (6), B (5), and W135 (1).

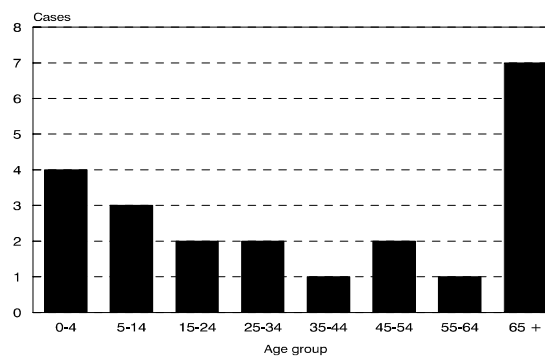
Meningococcal disease incidence rate by year  
Kansas, 1983-1999



Meningococcal cases by county  
Kansas, 1999



Meningococcal disease cases by age group  
Kansas, 1999



## MUMPS

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Mumps is an acute viral disease caused by a paramyxovirus. It is characterized by fever, swelling and tenderness of one or more salivary glands, usually the parotid and sometimes the sublingual or submaxillary glands. Orchitis may occur in males and oophoritis in females. Winter and spring are the times of increased occurrence. The incubation period is about 12 to 25 days, commonly 18 days. Mumps is transmitted by droplet spread and by direct contact with the saliva of an infected person.

Vaccine is available either as a single vaccine or in combination with rubella and measles live-virus vaccines (MMR). The vaccine has been available since 1971. The current recommendation in the USA is a routine two-dose MMR vaccine schedule, with the initial dose administered at 12-15 months of age. The second dose should be given at school entry (4-6 years of age).

### *Clinical Criteria*

An illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting  $\geq 2$  days, and without other apparent cause.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Isolation of mumps virus from clinical specimen, *or*
- Significant rise between acute- and convalescent-phase titers in serum mumps immunoglobulin G antibody level by any standard serologic assay, *or*
- Positive serologic test for mumps immunoglobulin M (IgM) antibody.

### *Surveillance Case Definition*

- *Confirmed*: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed or probable case. A laboratory confirmed case does not need to meet the clinical case definition.
- *Probable*: a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed or probable case.

### *Comment*

- All suspected cases of mumps are reportable and reviewed by the KDHE Immunization Program staff.
- K.A.R. 28-1-6 requires that respiratory isolation shall be instituted for nine days from the onset of parotid gland swelling.

Mumps incidence remains at low levels in the state in 1999, with only three cases meeting the surveillance case definition. One case had received two doses of the MMR vaccine, another case one dose, the other case none.

There were significant outbreaks of mumps in Kansas in 1988 and 1989. The outbreaks occurred due to the under immunization, not only in Kansas, but nationwide. Since 1992, there have been 0-3 cases reported annually in the state.

The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the first dose of the measles, mumps, and rubella vaccine (MMR1) was 91.7% in 1999.

The graph displays the incidence of AIDS cases per 100,000 population for Kansas and the United States from 1983 to 1995. The Y-axis represents the rate per 100,000, ranging from 0 to 14. The X-axis represents the year. Kansas is represented by a solid line with black circles, and the U.S. is represented by a dashed line with plus signs. Both series show a significant increase starting in the mid-1980s, with Kansas experiencing a very sharp peak in 1989.

Year	Kansas (per 100,000)	U.S. (per 100,000)
1983	3.2	1.8
1984	2.5	1.5
1985	2.2	1.5
1986	2.5	3.5
1987	3.0	5.5
1988	8.2	2.2
1989	12.0	2.5
1990	3.8	2.2
1991	1.2	1.8
1992	0.2	1.2
1993	0.1	0.8
1994	0.1	0.5
1995	0.1	0.2
1996	0.1	0.1
1997	0.1	0.1
1998	0.1	0.1
1999	0.1	0.1

## PERTUSSIS (WHOOPIING COUGH)

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Pertussis is a bacterial disease involving the respiratory tract caused by the bacillus *Bordetella pertussis*. Cough is the characteristic symptom, and it can become paroxysmal within one to two weeks. The cough is often followed by a characteristic inspiratory whoop and may be accompanied by post-tussive or vomiting. The disease can be fatal in young children. Fever is usually minimal throughout the course. Infants may present with apnea or cyanosis, while adults may present only with a chronic spasmodic cough. The disease is usually less severe among older children and adults. The incubation period is commonly 5 - 10 days, up to 21 days. Transmission is by contact with respiratory secretions of infected persons. Active immunization with five doses of DTaP (diphtheria and tetanus toxoid and acellular pertussis) vaccine at 2, 4, and 6 months, at 12-15 months and at school entry (4-6 years of age) can prevent this disease among young children, who are most severely affected. The efficacy of the vaccine in children who have received at least 3 doses is estimated to be 80%. Immunity begins to wane 3 years after last vaccination. In recent years, pertussis has been increasingly recognized among adolescents and young adults. No pertussis vaccine is available for use after the seventh birthday.

### ***Clinical Criteria***

A cough illness lasting  $\geq 2$  weeks with one of the following: paroxysms of coughing, inspiratory “whoop,” or post-tussive vomiting, without other apparent cause.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Bordetella pertussis* from clinical specimen **or**
- Positive polymerase chain reaction for *B. pertussis*.

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed or one that meets the clinical case definition and is either laboratory confirmed or epidemiologically linked to a laboratory-confirmed case.
- *Probable*: a case that meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a laboratory-confirmed case.

### ***Comment***

- All suspected cases of pertussis are reportable and reviewed by the KDHE Immunization Program staff.
- K.A.R. 28-1-6 requires that respiratory isolation shall be instituted for three weeks if untreated, or for five days following initiation of antibiotic therapy.

### ***Outbreaks***

- **Pertussis in Northeast Kansas**  
During May 31 - July 29, there were 4 laboratory confirmed and 10 epidemiologically linked cases in Kansas and Missouri. The cases were one month to 31 years of age. The case which was too young to receive DTaP was hospitalized. The outbreak was associated mostly with a church community in Johnson County.
- **Pertussis in Norton County**  
In September, there were four confirmed cases with one hospitalization, 52 individuals with clinical signs were identified, and 138 people given post exposure prophylaxis as a result of the investigation. The outbreak was associated mostly with a correctional facility in Norton County.
- **Pertussis in Allen County**  
During August 10 - September 5, there were a total of 11 cases, one laboratory confirmed and 10 epidemiologically linked cases, reported from one family. None of the children were vaccinated with DTaP. Members of the family were not vaccinated for religious reasons.

## *Epidemiology and Trends*

<i>1999 Case Total</i>	49
<i>Kansas rate</i>	1.9 per 100,000
<i>U.S. rate (1998)</i>	2.7 per 100,000

### *Cases by gender*

Female	23
Male	26

### *Cases by geographic area*

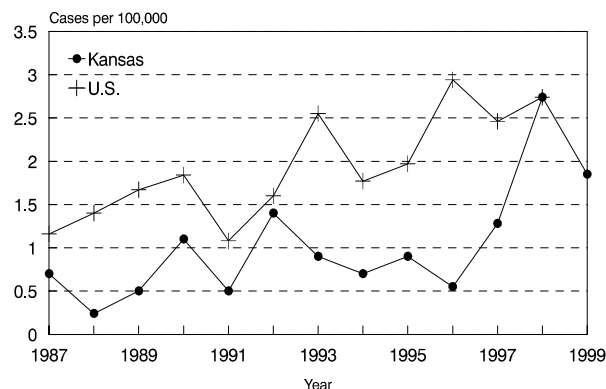
Urban	28
Rural	21

Reported cases of pertussis in Kansas decreased by 31%, with 49 cases in 1999 from 71 cases in 1998. The five-year median for 1994-1998 was 23 cases. Although pertussis affects all age groups, it is particularly severe and more commonly recognized and diagnosed in infants and young children. The cases ranged in age from infants less than 1 to 51 years of age. The median age was 8 years. The rate among children less than 5 years of age was 14.7 cases per 100,000 population and accounted for 55% of total pertussis morbidity.

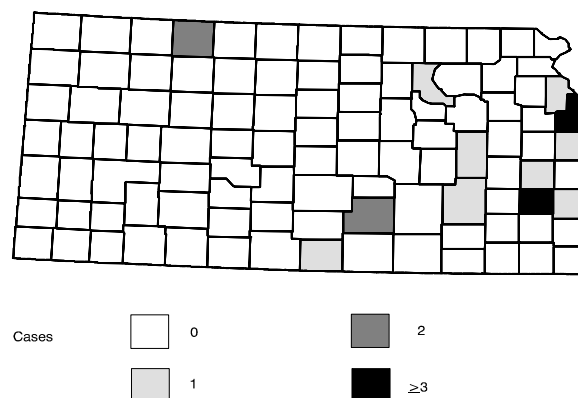
The ratio of female (23) to male (26) was about one to one. The majority of the cases were Whites (90%). Thirteen counties reported at least one case of pertussis. Fifty-seven percent of the cases (28) were reported from Johnson (3.4/100,000), Allen (6.9/100,000), and Norton (35.5/100,000) counties.

The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the fourth dose of the diphtheria, tetanus, and pertussis vaccine (DTaP4) was 82.9% in 1999.

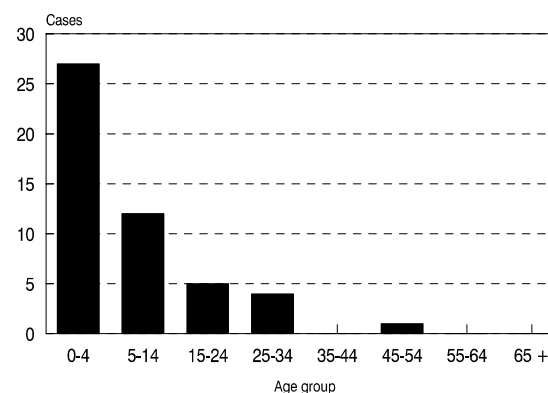
Pertussis incidence rate by year  
Kansas, 1987-1999



Pertussis cases by county  
Kansas, 1999



Pertussis cases by age group  
Kansas, 1999



## RABIES, ANIMAL

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Rabies is a viral infection caused by rabies virus, a rhabdovirus of the genus *Lyssavirus*. The disease affects the nervous system of mammals. Symptoms may include behavior changes, like unusual aggressiveness or paralysis (frequently beginning in the hind legs or the throat of an animal). Up-to-date vaccinations in dogs, cats, ferrets and livestock, prior to exposure, can protect these animals against the disease. The incubation period ranges from two weeks to many months. Rabies is almost always fatal once symptoms occur. It is usually transmitted by saliva from an infected animal's bite.

A dog, cat, or ferret inflicting a bite can be observed daily for 10 days following the bite to rule out rabies. If the animal remains healthy for that period, there is no risk of rabies transmission. If the animal develops signs of rabies or dies during the period, or belongs to a wildlife or exotic species, it must be euthanized humanely and arrangements must be made for rabies examination. Bats, raccoons, foxes, skunks, and other carnivorous wildlife should be presumed rabid until confirmed negative by laboratory diagnosis. Rodents, rabbits, hares, and opossums rarely transmit rabies, but any animal exhibiting unusual behavior should be suspected of carrying rabies.

Animal heads for rabies examination should be wrapped in several layers of plastic bags, placed in a leak-proof container with frozen gel packs, sealed, placed into a shipping box with a submission form, and sent to:

*Veterinary Diagnostic Laboratory/Rabies Laboratory  
College of Veterinary Medicine  
Kansas State University - V.C.S. Building  
1800 North Denison Avenue  
Manhattan, KS 66506-5601*

Contact the KSU rabies lab (785-532-4483) or KDHE (785-296-2951) for additional information on submitting specimens, or to answer other specific rabies questions.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- A positive direct fluorescent antibody test (preferably performed on central nervous system tissue), ***or***
- Isolation of rabies virus (in cell culture or in a laboratory animal).

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.

### ***Comment***

- More detailed information on rabies in Kansas can be found at: [www.vet.ksu.edu/depts/rabies](http://www.vet.ksu.edu/depts/rabies).

## ***Epidemiology and Trends***

1999 Case Total 107

Number of counties reporting rabid animals 31 (30%)

### ***Types of rabid animals***

Wild 91 (85%)

Domestic

Pets 6 (6%)

Live stock 10 (9%)

In Kansas, 107 laboratory confirmed cases of rabies in animals were reported during 1999, a 8% increase from 1998 (99). The five-year median for 1994-1998 was 46 cases. Thirty-one counties reported at least one rabid animal. Wildlife species accounted for 91 (85%) of diagnosed cases; 82 skunks accounted for 90% of the wildlife species and 77% of the total. Other wildlife species included bats (5) and foxes (4). Fifteen percent of rabies cases were among domestic animals (16); cats (6), cows (9), and horses (1).

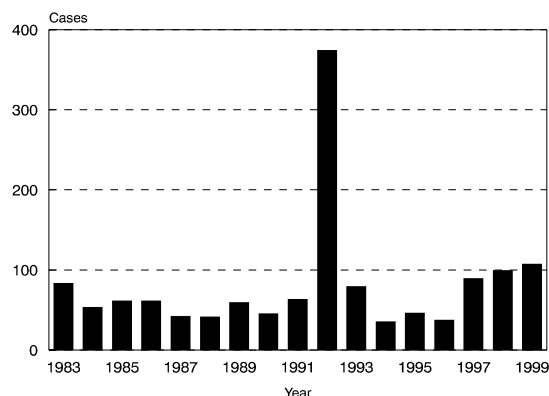
### ***Rabies was not found in the following species tested in Kansas during the past 9 years (1991-1999):***

Antelope, Baboon, Badger, Beaver, Bison, Chipmunk, Coati, Cougar, Deer, Ferret, Ground Squirrel, Gerbil, Goat, Gopher, Groundhog, Guinea Pig, Hamster, Hedgehog, Human, Lion, Llama, Mink, Mole, Mouse, Muskrat, Opossum, Pig, Porcine, Porcupine, Prairie Dog, Primate, Pronghorn, Rabbit, Rat, Ringtail, Rodent, Squirrel, Tiger, Weasel, Wolf, Woodchuck, other rodents/ lagomorphs.

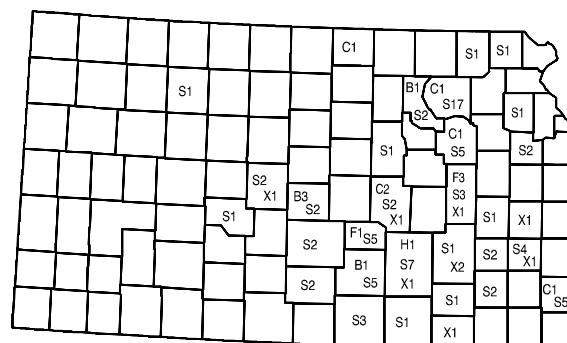
### ***Rabies was found in the following species tested in Kansas during the past 8 years (1992-1999):***

Bat, Bobcat, Cat, Cow, Dog, Fox, Horse, Raccoon, Sheep, Skunk.

Animal rabies by year  
Kansas, 1983-1999



Animal rabies by species and county  
Kansas, 1999



B=bat C=cat F=fox H=horse S=skunk X=cow

Rabid animals by species  
Kansas, 1999

Species	Number Tested	Number Positive	Percent Positive
Bat	107	5	4.7
Cat	737	6	0.8
Cow	55	9	16.4
Fox	7	4	57.1
Horse	14	1	7.1
Skunk	170	82	48.2



## ROCKY MOUNTAIN SPOTTED FEVER

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Rocky Mountain Spotted Fever (RMSF) is a disease caused by a rickettsial organism, *Rickettsia rickettsii*. It is most commonly characterized by acute onset of moderate to high fever, and is usually accompanied by myalgia, headache, and petechial rash (on the palms and soles in two thirds of the cases). Symptoms usually appear from 3 to about 14 days from the bite of an infected tick and fatalities can occur. One attack probably provides permanent immunity. RMSF is spread by the bite of an infected tick (including *Dermacentor variabilis*, the American dog tick, and *Amblyomma americanum*, the Lone star tick), or by contamination of the skin with tick blood or feces. Person-to-person or animal to human spread of RMSF does not occur. The tick must feed for 10-24 hours before the organism can be transmitted.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Fourfold or greater rise in antibody titer to *Rickettsia rickettsii* antigen by immunofluorescence antibody (IFA), complement fixation (CF), latex agglutination (LA), microagglutination (MA), or indirect hemagglutination antibody (IHA) test in acute- and convalescent-phase specimens ideally taken  $\geq 3$  weeks apart, **or**
- Positive polymerase chain reaction assay to *R. rickettsii*, **or**
- Demonstration of positive immunofluorescence of skin lesion (biopsy) or organ tissue (autopsy), **or**
- Isolation of *R. rickettsii* from clinical specimen.

### *Surveillance Case Definition*

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a clinically compatible case with a single IFA serologic titer of  $\geq 64$  or a single CF titer of  $\geq 16$  or other supportive serology (fourfold rise in titer or a single titer  $\geq 320$  by Proteus OX-19 or OX-2, or a single titer  $\geq 128$  by an LA, IHA, or MA test).

Fifty-two cases of RMSF were reported in Kansas for the ten year period 1990-1999; 1 to 18 cases have been reported annually. The precipitous drop in cases beginning in 1991 is largely unexplained.

The graph displays the incidence of measles per 100,000 people in Kansas and the United States from 1983 to 1999. The y-axis, labeled 'Cases per 100,000', has major tick marks at 0, 0.3, 0.6, 0.9, and 1.2. The x-axis, labeled 'Year', shows years from 1983 to 1999 in two-year increments. Kansas (solid line with circles) starts at approximately 0.82 in 1983, peaks at 1.1 in 1987 and 1988, and then generally declines to about 0.05 by 1999. The U.S. (solid line with plus signs) starts at approximately 0.48 in 1983, declines to about 0.25 by 1987, and then fluctuates between 0.1 and 0.3 until 1999.

Year	Kansas (Cases per 100,000)	U.S. (Cases per 100,000)
1983	0.82	0.48
1984	0.72	0.35
1985	0.90	0.30
1986	0.40	0.32
1987	1.10	0.25
1988	1.10	0.25
1989	0.70	0.25
1990	0.70	0.26
1991	0.20	0.25
1992	0.20	0.18
1993	0.05	0.18
1994	0.20	0.18
1995	0.15	0.25
1996	0.08	0.32
1997	0.28	0.18
1998	0.12	0.12
1999	0.05	0.12

Cases

0

1

## RUBELLA (“German Measles”)

---

Rubella is a mild febrile viral disease caused by *Rubivirus* species. The symptoms are a fever and rash along with enlarged lymph nodes in the head and neck. While the illness is only rarely serious in children or adults, it can produce congenital anomalies or intrauterine death in women infected during pregnancy. Congenital rubella syndrome (CRS) occurs in up to 90% of infants born to women who acquired confirmed rubella during the first trimester of pregnancy. The incubation period is 16 to 18 days, and transmission is from respiratory or direct contact with infected persons. Rubella can be prevented by vaccination. The current recommendation in the USA is a routine two-dose MMR vaccine schedule, with the initial dose administered at 12-15 months of age. The second dose should be given at school entry (4-6 years of age). Vaccine should not be given to anyone who is immunosuppressed, or to pregnant women.

### *Clinical Criteria*

An illness that has all the following characteristics: acute onset of generalized maculopapular rash; temperature  $>99.0^{\circ}\text{F}$  ( $>37.2^{\circ}\text{C}$ ), if measured; arthralgia/arthritis, lymphadenopathy, or conjunctivitis

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Isolation of rubella virus, *or*
- Significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay, *or*
- Positive serologic test for rubella immunoglobulin M (IgM) antibody

### *Surveillance Case Definition*

- *Confirmed*: a case that is laboratory confirmed or that meets the clinical description and is epidemiologically linked to a laboratory-confirmed case
- *Probable*: a case that meets the clinical description, has no or noncontributory serologic or virologic testing, and is not epidemiologically linked to a laboratory-confirmed case
- *Suspected*: any generalized rash illness of acute onset

### *Comment*

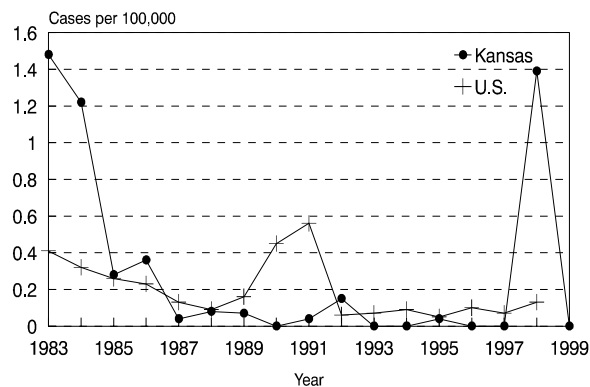
- All suspected cases of rubella are reportable and reviewed by the KDHE Immunization Program staff.

### *Epidemiology and Trends*

1999 Case Total           0  
U.S. rate (1998)       0.1 per 100,000

In 1999, there were no reported rubella cases in Kansas. The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the first dose of the measles, mumps, and rubella vaccine (MMR1) was 91.7% in 1999.

Rubella incidence rate by year  
Kansas, 1983-1999



## SALMONELLOSIS (non-typhoidal)

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Salmonellosis is an enteric bacterial disease caused by numerous serotypes of *Salmonella*, which can be pathogenic for both animals and people. The symptoms include fever, headache, diarrhea, abdominal pain, nausea, and sometimes vomiting. Young children, people with special health conditions, and the elderly are more likely to experience severe symptoms with complications. The bacteria can cause severe dehydration and may become invasive. Asymptomatic infections can occur. The incubation period ranges from 6 to 72 hours, usually 12-36 hours. The disease is transmitted by ingestion, usually by eating or drinking raw or undercooked eggs, raw milk, contaminated water, meat, or poultry products. In addition, pet reptiles and chicks, and other animals can be sources of these bacteria.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *Salmonella* spp. from a clinical specimen.

### ***Surveillance Case Definition***

- *Confirmed*: a case that is laboratory confirmed.
- *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.

### ***Comment***

- Kansas laws require that isolates be sent to Kansas Health and Environmental Laboratory for serotyping.
- K.A.R.28-1-6 requires that infected persons with diarrhea shall be excluded from food handling, patient care, or occupations involving the care of young children and the elderly until no longer symptomatic. Asymptomatic and convalescent infected persons without diarrhea may be excluded from, and return to, this work by the order of the local health officer or the department. Enteric precautions shall be followed for the duration of acute symptoms.

### ***Outbreaks***

- *Salmonella typhimurium*, Chicks and Ducklings  
In April, 1999, the Missouri Department of Health noted a cluster of *S. Typhimurium* infections with an identical Pulsed Field Gel Electrophoresis (PFGE) pattern; 40 cases were identified with onset of illness during April 4 - May 30, 1999 (10 cases were reported from Kansas). The ages of infected persons ranged from 8 months to 46 years (mean: 13 years); 28 (70%) were age <20 years; 23 (58%) were male. Three patients were hospitalized. Overall, 32 (97%) persons reported exposure to young fowl: 18 (56%) were exposed to chicks, 10 (31%) to ducklings, 3 (9%) to both chicks and ducklings, and one (3%) to a young turkey.
- *Salmonella Java*  
In late May and early June, 1999, a total of four cases of *S. Java* were reported in Kansas. Three cases had an identical PFGE pattern. No causative source was identified.
- *Salmonella newport* in Southwest Kansas  
In August, 1999, over 50 people were ill and seven were hospitalized. Five cases were confirmed by stool culture and two were identified as *S. Newport*. The PFGE patterns on at least two of the cases were identical. All cases were associated with eating from a specific vendor at a county fair.
- *Salmonella javiana* in Northeast Kansas  
At the end of July, 1999, an outbreak attributed to *S. Javiana* has been associated with an event in Kansas City, Missouri. There were 8 culture confirmed cases, including at least 3 in Johnson and Wyandotte counties.

## Epidemiology and Trends

1999 Case Total	333
Kansas rate	12.6 per 100,000
U.S. rate (1998)	16.2 per 100,000

### Rate by gender

Female	13.4 per 100,000
Male	11.3 per 100,000

### Rate by Race/ethnicity

White	10.2 per 100,000
African-American	5.8 per 1000,000
Asian/Pacific Islander	8.6 per 100,000
Native Am.	12.9 per 100,000
Hispanic	12.2 per 100,000

### Rate by geographic area

Urban	12.3 per 100,000
Rural	12.8 per 100,000

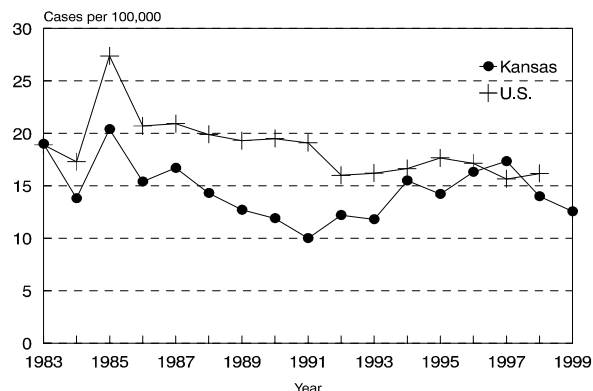
The 333 cases of salmonellosis reported in Kansas represented an 8% decrease from the 363 cases reported in 1999, but over the past 10 years, the annual number of cases has been relatively steady. The five-year median for 1994-1998 was 397 cases.

The cases ranged in age from less than 1 to 99 years of age (median age: 23). The highest incidence rate occurred in those less than 5 years (48.9 per 100,000), comprising 27% of the reported cases. Fifty-four percent of cases were female. Seventy-four percent of the cases were in Whites, and 3% in African-Americans. The ratio of urban to rural was about one to one.

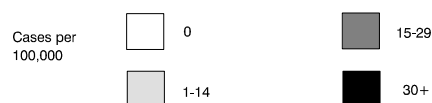
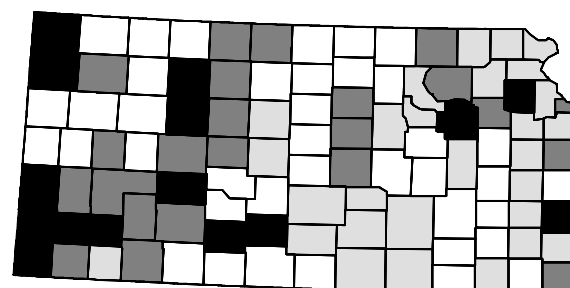
The serotype was available for 74% (248) of the salmonellosis cases reported. The eight most frequently isolated serotypes were: *S. typhimurium* (70), *S. newport* (34), *S. enteritidis* (19), *S. heidelberg* (17), *S. var. copenhagen*\* (12), *S. javiana* (9), and *S. Java* (9).

\* *S. copenhagen* is a variant of *S. typhimurium*.

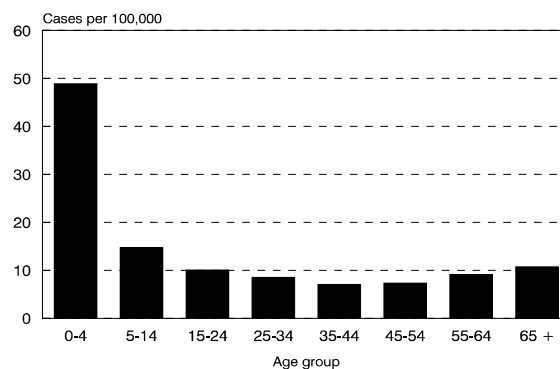
Salmonellosis incidence rate by year  
Kansas, 1983-1999



Salmonellosis rate by county  
Kansas, 1999



Salmonellosis rate by age group  
Kansas, 1999



## SHIGELLOSIS

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Shigellosis is a bacterial infection affecting the intestinal tract caused by bacteria belonging to the *Shigella* species. *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei* account for most of the cases. Only humans carry *Shigella* bacteria. Symptoms usually include bloody diarrhea, accompanied by fever, nausea, abdominal cramps, and tenesmus; asymptomatic infections may occur. Illness is often self-limiting lasting four to seven days, occasionally up to weeks or months. The incubation period ranges from 12 to 96 hours, but may be as long as one week. Transmission is by the fecal-oral route and very few organisms are needed for infection. The usual mode of transmission is from hands contaminated with human fecal material that are not adequately washed after toileting and subsequently transfer the bacteria to food or water. Direct person-to-person transmission is very common. Flies may transmit the disease by carrying the bacteria on their legs to food.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Isolation of *Shigella* spp. from a clinical specimen.

### *Surveillance Case Definition*

- *Confirmed*: a case that is laboratory confirmed.
- *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.

### *Comment*

- Kansas laws require that isolates be sent to the Kansas Health and Environmental Laboratory for serotyping.
- K.A.R. 28-1-6 requires that infected persons shall be excluded from food handling, patient care, or occupations involving the care of young children and the elderly until two negative stool cultures are obtained at least 24 hours apart and no sooner than 48 hours following the discontinuation of antibiotics. Enteric precautions shall be followed for duration of acute symptoms.

### *Outbreaks*

- During the fall of 1999, three distinct community-based outbreaks of shigellosis were seen. The first was identified in Pratt County with 10 culture-confirmed cases in October and November. The second was identified in Cherokee County with 18 culture-confirmed cases from September through December and included cases in Jasper County, Missouri. The third outbreak was identified in the south west region involving at least 8 confirmed cases in Ford, Haskell, and Finney Counties beginning in September. Pulsed-field gel electrophoresis conducted by the Kansas Health and Environmental Laboratory confirmed that the cases within each outbreak were related, but that the outbreaks were not related to each other.

There was no evidence of a common source of exposure such as a food product or food service facility. Virtually all cases (adult and child) were associated directly or indirectly with children in pre-school child care facilities. The outbreaks were brought under control by extensive community-wide hand washing education and the application of appropriate exclusion guidelines for confirmed and suspect cases.

## Epidemiology and Trends

1999 Case Total	89
Kansas rate	3.4 per 100,000
U.S. rate (1998)	8.7 per 100,000

### Rate by gender

Female	3.6 per 100,000
Male	2.9 per 100,000

### Rate by race/ethnicity

White	2.8 per 100,000
African-American	0.7 per 100,000
Asian/Pacific Islander	2.2 per 100,000
Hispanic	13.6 per 100,000

### Rate by geographic area

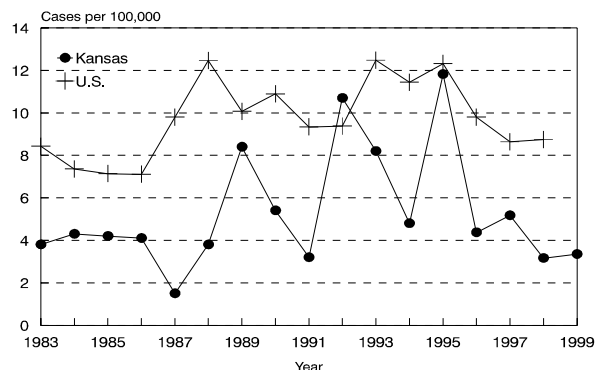
Urban	2.0 per 100,000
Rural	4.7 per 100,000

Eighty- nine cases of shigellosis were reported in Kansas during 1999. This is a 9% increase as compared to 82 cases reported in 1998. The five-year median for 1994-1998 was 123 cases. There were three reported outbreaks.

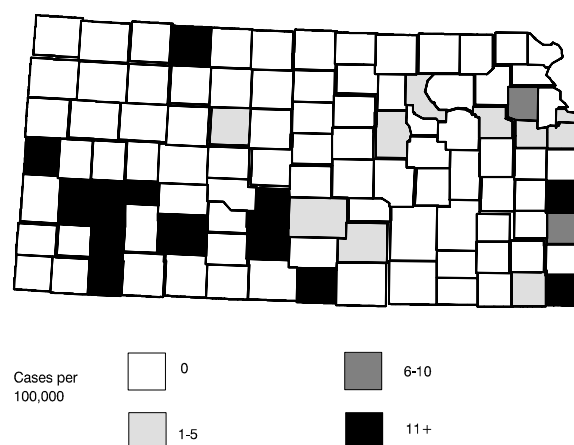
The cases ranged in age from less than 1 to 84 years; median age was 7 years. Children less than 5 years comprised 34% of the cases and with the highest age-specific incidence rate, 16.3 case per 100,000 population. Fifty-five percent of cases were in females. Seventy-five percent of the cases were in Whites. Seventy-one percent of the cases were reported from rural areas.

The species was identified for 79% of the cases. Of the 70 cases for whom this information was known, 86% were *S. sonnei*, and 14% *S. flexneri*.

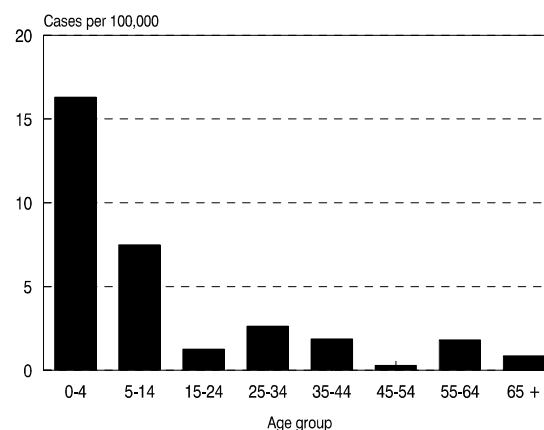
Shigellosis incidence rate by year  
Kansas, 1983-1999



Shigellosis rate by county  
Kansas, 1999



Shigellosis rate by age group  
Kansas, 1999





## ***STREPTOCOCCUS PNEUMONIAE*, drug-resistant invasive disease**

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*Streptococcus pneumoniae* causes many clinical syndromes, depending on the site of infection (e.g., acute otitis media, pneumonia, bacteremia, or meningitis). “Drug-resistant invasive” refers to *S. pneumoniae* infections involving normally sterile sites (such as blood, cerebrospinal fluid, joint, pleural, or pericardial fluid) that show intermediate- or high-level resistance to at least one antimicrobial agent currently approved for use in treating pneumococcal infection. Invasive streptococcus pneumoniae disease is characterized typically by sudden onset with a shaking chill, fever, pleural pain, dyspnea, tachypnea, and leukocytosis. The onset may be less abrupt, especially in the elderly. In infants and young children, fever, vomiting and convulsions may be the initial manifestations. Symptoms vary depending on the site and route of infection. The incubation period is not well determined; it may be as short as 1-3 days. Mode of transmission is by droplet spread, by direct oral contact, or indirectly through articles freshly soiled with respiratory discharges. Person-to-person transmission of the organisms is common, but illness among casual contacts and attendants is infrequent.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *S. pneumoniae* from a normally sterile site (e.g., blood, cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid) **and**
- “Nonsusceptible” isolate (i.e., intermediate- or high-level resistance of the *S. pneumoniae* isolate to at least one antimicrobial agent currently approved for use in treating pneumococcal infection).

### ***Surveillance Case Definition***

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a clinically compatible case caused by laboratory-confirmed culture of *S. pneumoniae* identified as “nonsusceptible” (i.e., an oxacillin zone size of <20 mm) when oxacillin screening is the only method of antimicrobial susceptibility testing performed.

### ***Comment***

- National Committee for Clinical Laboratory Standards (NCCLS) recommends that all invasive *S. pneumoniae* isolates found to be “possibly resistant” to beta-lactams (i.e., an oxacillin zone size of <20 mm) by oxacillin screening should undergo further susceptibility testing by using a quantitative minimum inhibitory concentration (MIC) method acceptable for penicillin, extended-spectrum cephalosporins, and other drugs as clinically indicated.

**Note:** Starting in 2000, all invasive *Streptococcus pneumoniae* cases are reportable.

### *Epidemiology and Trends*

1999 Case Total	9
Kansas rate	0.3 per 100,000
U.S. rate	N/A

#### *Cases by gender*

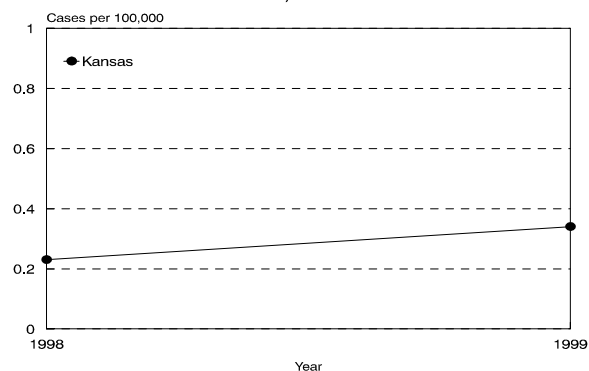
Female	6
Male	3

#### *Cases by geographic area*

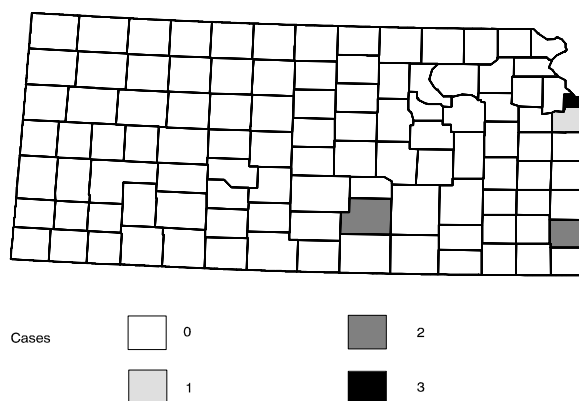
Urban	7
Rural	2

*Streptococcus pneumoniae*, drug-resistant invasive infection became a reportable condition in Kansas in 1999. There were 9 cases of *Streptococcus pneumoniae*, drug-resistant invasive disease reported. The cases ranged in age from 1 to 86 years; median age was 33 years. The ratio of female to male was two to one. Seven cases were reported from urban areas.

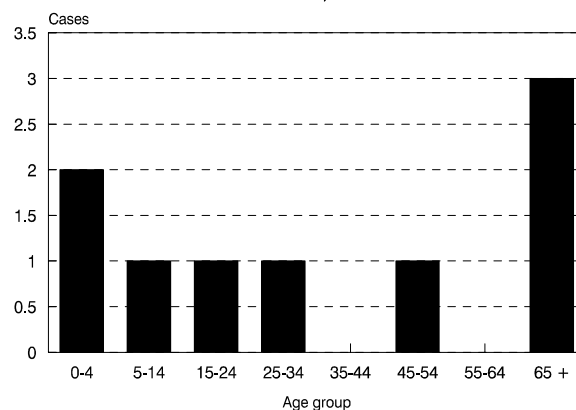
*Streptococcus pneumoniae*, drug-resistant  
invasive disease incidence rate by year  
Kansas, 1998-1999



*Streptococcus pneumoniae*, drug-resistant  
invasive disease cases by county  
Kansas, 1999



*Streptococcus pneumoniae*, drug-resistant  
invasive disease cases by age group  
Kansas, 1999



## **SYPHILIS, PRIMARY AND SECONDARY**

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Syphilis is a complex sexually transmitted disease caused by the spirochete *Treponema pallidum*. The infection usually progresses through four stages:

- *Primary Syphilis*: the most infectious stage, characterized by one or more chancres (ulcers) that appear 10 to 90 days after exposure. The chancre appears at the site of exposure and heals within one to four weeks, even without treatment.
- *Secondary Syphilis*: a stage of infection characterized by localized or diffuse mucocutaneous lesions, often with generalized lymphadenopathy. The primary chancre may still be present. The skin eruptions can appear as a variety of different rashes and may begin while the chancre is present. However, it usually starts four weeks after the chancre resolves and can occur up to six months after inoculation. The rash resolves in two to six weeks, but may recur with infectious lesions for the first year of the disease. The most common secondary rash is a maculopapular rash of the palms and soles.
- *Early Latent Syphilis*: occurs when the primary and secondary symptoms resolve and lasts throughout the first year of infection. This stage represents the asymptomatic stage of the infection, however, all serologic tests for syphilis will be positive.
- *Late Syphilis*: characterized by manifestations that occur 5 to 20 years after infection. They include gummas (a lump with gummy contents); destructive lesions of the skin, viscera, bone and mucosa surfaces; cardiovascular syphilis, destructive lesions of the aorta; and neurosyphilis, destruction of areas of the central nervous system including the brain. Late syphilis can cause death or permanent disability.

Fetal infection often occurs in pregnant women with untreated primary, secondary or early latent syphilis. It can also occur, with less frequency, in women who have untreated late latent syphilis. This infection may cause stillbirth, infant death, or severe complications that do not manifest and become apparent until much later in life. They include interstitial keratitis, saber shins, Hutchinson's teeth, saddlenose, and deafness. The presence of the lesions caused by primary and secondary syphilis increases the risk of acquiring HIV infection. Syphilis is transmitted by direct contact with infectious exudates from lesions of the skin and mucous membranes, body fluids and secretions (saliva, semen, blood, vaginal discharges) of infected people during sexual contact. Transmission can occur through blood transfusion if the donor is in the early stages of the disease. Fetal infection usually occurs through placental transfer or at delivery.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or equivalent methods, or by clinical manifestations of acquired infection.

### ***Surveillance Case Definition***

- Confirmed: a clinically compatible case that is laboratory confirmed.

### ***Comments***

- K.A.R. 28-1-6 requires that isolation or quarantine measures shall be established by the local health officer for persons who are confirmed or suspected of being infected with a STD if these persons are recalcitrant to proper treatment.
- More detailed information on STDs in Kansas is available at: [www.kdhe.state.ks.us/std](http://www.kdhe.state.ks.us/std).

## Epidemiology and Trends

1999 Case Total	14
Kansas rate	0.5 per 100,000
U.S. rate (1998)	2.6 per 100,000

### Cases by gender

Female	8
Male	6

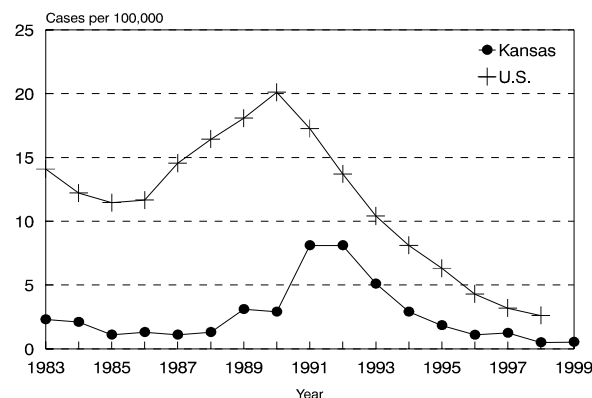
### Cases by geographic area

Urban	13
Rural	1

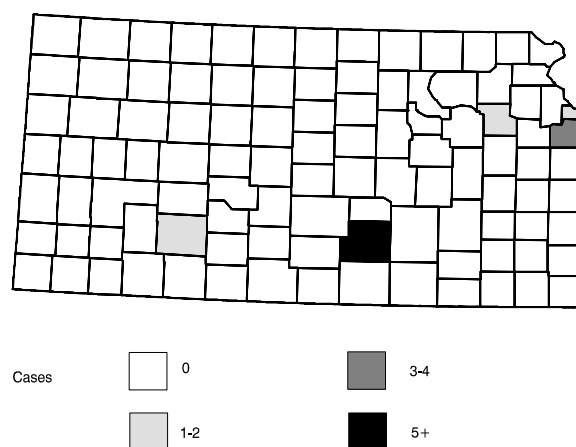
Primary and secondary (P&S) cases in Kansas increased dramatically in 1989, followed by a sharp decline beginning in 1993. This decrease mirrors similar trends at the national level. In 1999, the number of reported Kansas primary and secondary syphilis cases (14) increased a 17% from 1998 (12), with an incidence rate of 0.5 per 100,000. This is well below the 1998 national rate of 2.6 cases per 100,000 population. The five-year median for 1994-1998 was 32 cases. While accounting for a small proportion of cases among the many reportable STDs in Kansas, syphilis remains important because of its potential for elimination as well as its role as a risk factor for HIV infection and transmission. Studies have shown that genital ulcer infections, such as syphilis, may increase the risk of HIV transmission 50-300 times.

The cases ranged from 18 to 48 years of age. The median age was 22 years. Fifty-seven percent of the cases were females. Minority racial/ethnic populations are disproportionately affected by P&S syphilis in Kansas. Thirty-six percent of the cases were African-Americans. This may reflect reporting bias, as described in the introduction. Mirroring the trend for gonorrhea, 93% of the P&S cases in the state were reported from the four metropolitan areas. No cases of congenital syphilis or neurosyphilis were reported for the year.

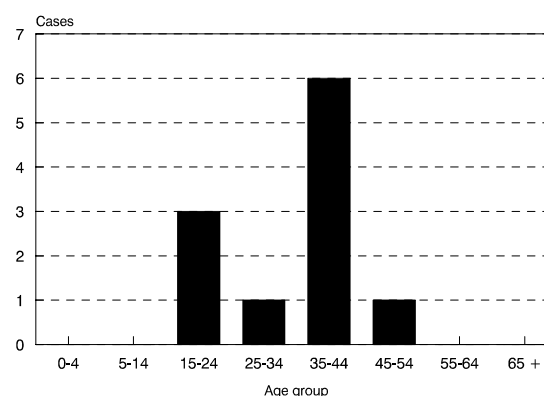
Primary and secondary syphilis incidence rate by year - Kansas, 1983-1999



Primary and secondary syphilis cases by county Kansas, 1999



Primary and secondary syphilis cases by age group - Kansas, 1998



## TETANUS

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Tetanus is an acute disease induced by an exotoxin of the tetanus bacillus, *Clostridium tetani*. It is characterized with an acute onset of hypertonia (extreme tension of the muscles) and/or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms without other apparent medical cause, following the contamination of a wound with *Clostridium tetani*. The incubation period is usually 3-21 days, with an average of 10 days. There is no direct transmission from person to person. A vaccine to prevent tetanus is available.

Tetanus toxoid is administered with diphtheria toxoid and acellular pertussis (DTaP) vaccine as a triple antigen for children <7 years of age. It is routinely administered at 2, 4, and 6 months, with booster doses at 15-18 months of age and school entry (4-6 years of age). Active protection should be maintained by administering booster doses of Td (tetanus diphtheria) every 10 years. Protection with vaccine is recommended for universal use regardless of age. It is especially important for workers in contact with soil, sewage, domestic animals; members of the military forces; policemen and others with greater than usual risk of traumatic injury; and adults ≥65 years who are currently at highest risk for tetanus and tetanus related mortality. Vaccine induced maternal immunity is important in preventing neonatal tetanus.

### *Laboratory Criteria for Confirmation for Surveillance Purposes*

- Not required

### *Surveillance Case Definition*

- *Confirmed:* a clinically compatible case **with or without** laboratory isolation of *Clostridium tetani*.

### *Comment*

- All suspected cases of tetanus are reportable and reviewed by the KDHE Immunization Program staff.

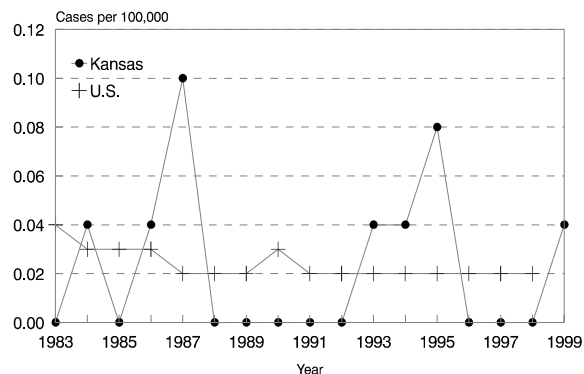
### *Disease Trends*

1999 Case Total	1
Kansas rate	<0.1 per 100,000
U.S. rate (1998)	<0.1 per 100,000

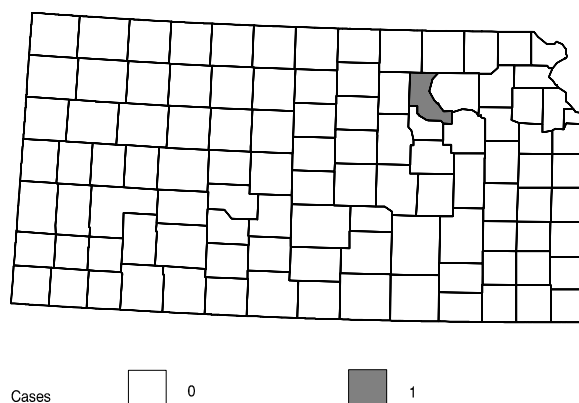
A total of 10 cases of tetanus were reported in Kansas between 1983 and 1998. The cases ranged in age from 24 to 82 years of age. In 1999, there was one tetanus case reported. The case died of tetanus and had no documentation of tetanus vaccination. This was the first case of tetanus confirmed in Kansas since 1995.

The national immunization goal for the year 2000 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Kansas immunization mean coverage rate of county health departments for the fourth dose of the diphtheria, tetanus, and pertussis vaccine (DTaP4) was 82.9% in 1999.

Tetanus incidence rate by year  
Kansas, 1983-1999



Tetanus cases by county  
Kansas, 1999



## TOXIC SHOCK SYNDROME, streptococcal and staphylococcal

---

Toxic-shock syndrome (TSS) is a severe illness associated with invasive or noninvasive group A streptococcal (*Streptococcus pyogenes*) and staphylococcal infections. The illness may occur with infection at any site but most often occurs in association with infection of a cutaneous lesion. Signs of toxicity and a rapidly progressive clinical course are characteristic, and the case-fatality rate may exceed 50%. TSS is characterized by sudden onset of high fever, vomiting, profuse watery diarrhea, myalgia and hypotension and, shock. A rash, which may result in desquamation of the skin, occurs in the first two weeks of illness. The incubation period is short, usually 1-3 days. Strains of TSS bacteria are rarely present in vaginal cultures from healthy women, but are regularly recovered from women with menstrually associated TSS or in those with TSS following gynecologic surgery. Although almost early cases of TSS occurred in women during menstruation, and most were associated with vaginal tampon use, only 55% of cases now reported are associated with menses. Other risk factors include use of contraceptive diaphragms and vaginal contraceptive sponges, and infection following childbirth or abortion.

### ***Clinical Criteria***

An illness with the following clinical manifestations:

- *Fever*: temperature  $\geq 102.0$  F ( $\geq 38.9$  C).
- *Rash*: diffuse macular erythroderma.
- *Desquamation*: 1-2 weeks after onset of illness, particularly on the palms and soles.
- *Hypotension*: systolic blood pressure  $\leq 90$  mm Hg for adults or less than fifth percentile by age for children aged  $<16$  years; orthostatic drop in diastolic blood pressure  $\geq 15$  mm Hg from lying to sitting, orthostatic syncope, or orthostatic dizziness.
- *Multisystem involvement* -- three or more of the following:
  - Gastrointestinal*: vomiting or diarrhea at onset of illness.
  - Muscular*: severe myalgia or creatine phosphokinase level at least twice the upper limit of normal for laboratory.
  - Renal*: blood urea nitrogen or creatine at least twice the upper limit for normal for laboratory or urinary sediment with pyuria ( $\geq 5$  leukocytes per high-power field) in the absence of urinary tract infection.
  - Hepatic*: total bilirubin, serum glutamic-oxaloacetic transaminase (SGOT), or serum glutamic-pyruvic transaminase (SGPT) at least twice the upper limit of normal for laboratory.
  - Central Nervous System*: disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

Negative results on the following tests, if obtained:

- Blood, throat, or cerebrospinal fluid cultures (blood culture may be positive for *Staphylococcus aureus*).
- Rise in titer to Rocky Mountain Spotted Fever, leptospirosis, or measles.

### ***Surveillance Case Definition***

- *Confirmed*: a case in which all of the clinical findings described above are present, including desquamation, unless the patient dies before desquamation occurs.
- *Probable*: a case in which five of clinical findings described above are present.

### *Epidemiology and Trends*

<i>1999 Case Total</i>	11
Kansas rate	0.4 per 100,000
U.S. rate (1998)	0.1 per 100,000

#### *Cases by gender*

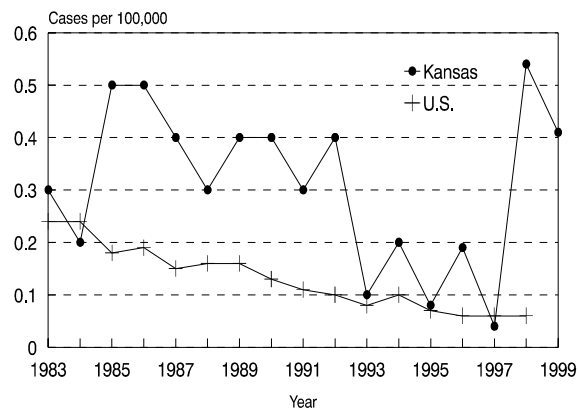
Female	3
Male	8

#### *Cases by geographic area*

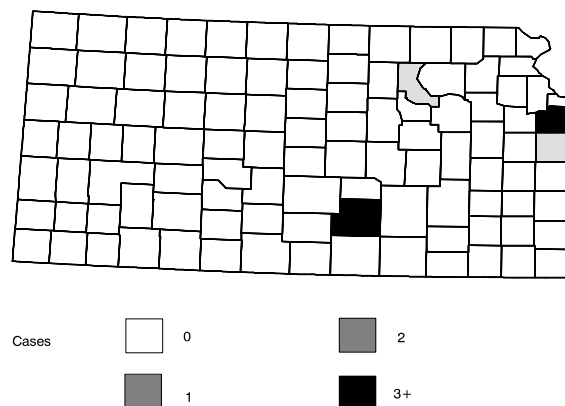
Urban	9
Rural	2

There were 11 cases of toxic shock syndrome reported in 1999. Six cases of Group A *streptococcus*, 3 *streptococcus*, and 2 *staphylococcus aureus* were identified as the cause of illness. The cases ranged in age from 4 to 87 years. The median was 21 years. Eight cases were reported in males. Nine cases were reported from urban areas. All were hospitalized, and no deaths were reported.

Toxic Shock Syndrome incidence rate by year  
Kansas, 1983-1999



Toxic shock syndrome cases by county  
Kansas, 1999





## TRICHINOSIS

---

Trichinosis is caused by an intestinal nematode whose larvae (trichinae) migrate to and become encapsulated in the muscles. People become infected by consuming undercooked meat containing the cysts of the organism. Initial symptoms of disease include diarrhea, vomiting and nausea that occur within a few days of ingestion. Gastrointestinal (GI) symptoms may appear within a few days or may be absent. In the second phase of illness, which begins one to two weeks after exposure, myalgia, periorbital edema, fever, cough and cardiac and neurologic complications may occur. Systemic symptoms usually appear about 8-15 days after ingestion of infected meat, but varies between 5 and 45 days depending on the number of parasites involved. Titers to trichinosis rise at the third to sixth week following infection. Eosinophilia is common. Muscle biopsies with the non-calcified larvae of *T. spiralis* indicate recent infection. Larvae also may be identified in suspect food.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy, or
- Positive serologic test for *Trichinella*

### ***Surveillance Case Definition***

- *Confirmed*: a clinically compatible case that is laboratory confirmed

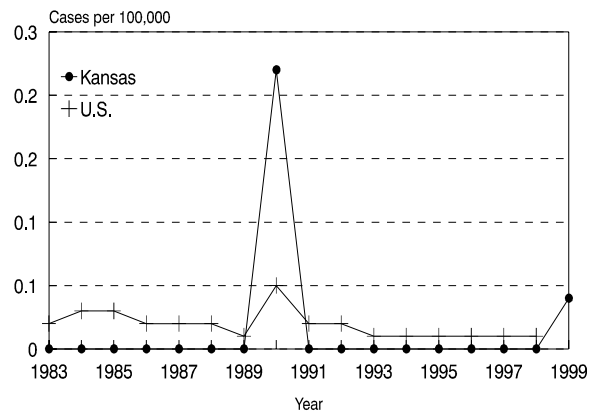
### *Epidemiology and Trends*

1999 Case Total        1  
 Kansas rate            <0.1 per 100,000  
 U.S. rate (1998)       <0.1 per 100,000

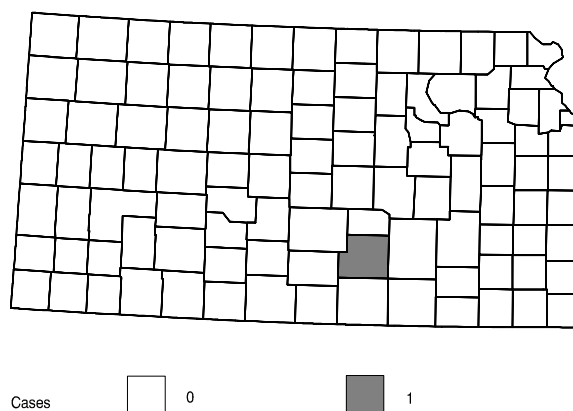
A total of six cases of trichinosis were reported in Kansas between 1983 and 1998. All six cases were reported in 1990. These were sporadic cases, no outbreaks were reported.

In 1999, there was one trichinosis case reported. The illness may have attributed to exotic meat (i.e. bear) consumption. This was the first case of trichinosis in any age group confirmed in Kansas since 1990.

Trichinosis incidence rate by year  
 Kansas, 1983-1999



Trichinosis cases by county  
 Kansas, 1999



## TUBERCULOSIS (TB)

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*Mycobacterium tuberculosis* is a serious disease caused by a type of bacteria that can be spread from person to person through the air. The most common site of disease is the lungs (pulmonary TB), but other organs (extrapulmonary TB) may be involved (e.g., brain, lymph nodes, kidneys, bones, joints, larynx, intestines, eyes). Systemic symptoms include low-grade fever, night sweats, fatigue, and weight loss. In pulmonary or laryngeal TB, there may also be hemoptysis, a persistent and productive cough, chest pain, and shortness of breath. The incubation period is about 2-12 weeks, from infection to demonstrable primary lesion or significant tuberculin reaction. Tuberculosis is transmitted by exposure to tubercle bacilli through inhalation in airborne droplet nuclei produced by people with active pulmonary TB. Prolonged close contact with these cases may lead to infection. Epidemics of tuberculosis have occurred among individuals in enclosed places, such as nursing homes, jails, hospitals, schools, office buildings, and factories. There are multi-drug resistant (i.e., resistant to both isoniazid and rifampin) forms of *M. tuberculosis*.

### ***Clinical Criteria***

A case that meets the following criteria:

- A positive tuberculin skin test.
- Other signs and symptoms compatible with tuberculosis (e.g., an abnormal, unstable [i.e., worsening or improving] chest radiographs, or clinical evidence of current disease).
- Treatment with two or more antituberculosis medications.
- Completed diagnostic evaluation.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

- Isolation of *M. tuberculosis* from a clinical specimen **or**
- Demonstration of *M. tuberculosis* from a clinical specimen by nucleic acid amplification test, **or**
- Demonstration of acid-fast bacilli in a clinical specimen when a culture has not been or cannot be obtained.

### ***Surveillance Case Definition***

- *Confirmed*: a case that meets the clinical case criteria or is laboratory confirmed.

### ***Comment***

- Isolates must be sent to the Kansas Health and Environmental Laboratory.
- K.A.R. 28-1-6 requires that respiratory isolation shall be instituted until three sputa obtained on consecutive days are negative by microscopic examination.

## Epidemiology and Trends

1999 Total Case	69
Kansas rate	2.6 per 100,000
U.S. rate (1998)	6.8 per 100,000

### Rate by gender

Female	1.8 per 100,000
Male	3.4 per 100,000

### Rate by race/ethnicity

White	0.7 per 100,000
African-American	6.8 per 100,000
Asian/Pacific Islander	32.1 per 100,000
Hispanic	20.0 per 100,000

### Rate by geographic area

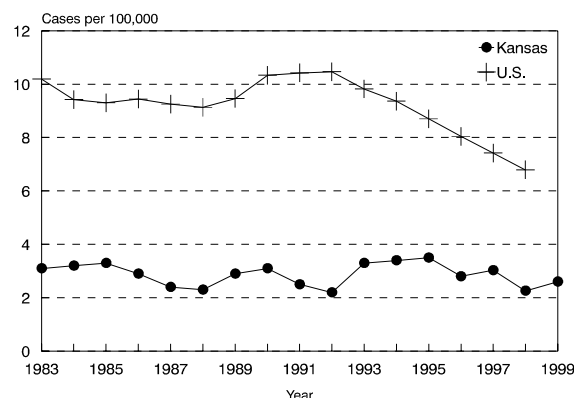
Urban	2.7 per 100,000
Rural	2.5 per 100,000

There were 69 cases of active tuberculosis reported in 1999. This represented a 23% increase over the 56 cases in 1998. The five-year median for 1994-1998 was 78 cases. Cases ranged in age from 1 to 90 years of age; median age was 35 years. Forty five cases (65%) were among males. Sedgwick county reported the highest number of new cases with 26 (5.8 per 100,000 population).

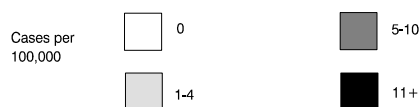
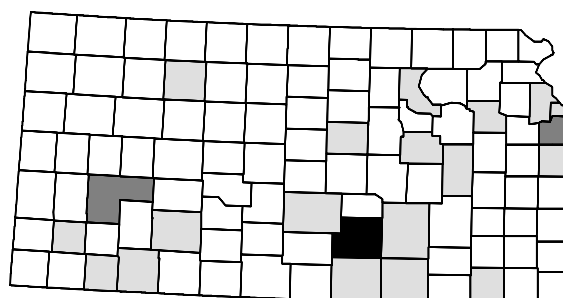
Reported TB cases in Kansas are not evenly distributed among the various racial and ethnic groups; 17 Whites (25%), 14 Asian/Pacific Islanders (20%), 28 Hispanics (41%), and 10 African-Americans (14%). This probably results from disproportionate numbers of high-risk individuals in certain racial and ethnic groups. Foreign-born persons are another important population group at risk of developing tuberculosis. Twenty-eight (41%) of all cases of TB in the state occurred among foreign-born individuals from high prevalence countries.

Tuberculosis is a systemic disease with diverse manifestations. Although the site of disease involvement is usually the lungs (68%), extrapulmonary disease represents about 32% of cases in 1999. There were three cases of TB-HIV co-infection, up from one case in 1998. No cases of multi-drug resistant TB were reported in Kansas in 1999.

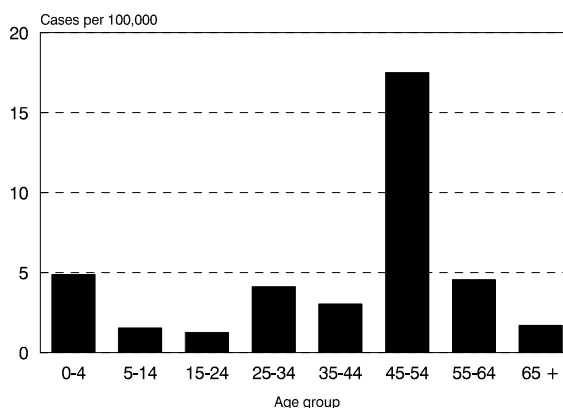
Tuberculosis incidence rate by year  
Kansas, 1983-1999



Tuberculosis rate by county  
Kansas, 1999



Tuberculosis rate by age group  
Kansas, 1999



## TULAREMIA

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Tularemia is caused by the bacterium *Francisella tularensis*, with a variety of clinical presentations including lymphadenopathy, with or without cutaneous ulceration, and with or without conjunctivitis; pharyngitis, sepsis, intestinal signs, pneumonic disease, and a typhoidal illness without localizing signs and symptoms. It is transmitted by arthropods; inoculation of skin, conjunctiva, or mucosa when handling contaminated material; by drinking contaminated water, ingesting contaminated food; inhalation of the organism in contaminated dust; or by bites of contaminated animals. Clinical signs are dependent on the route of exposure. The incubation period ranges 1-14 days, usually 3-5 days. Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to tissues of a mammalian host of *Francisella tularensis*, or exposure to potentially contaminated water. People who spend a great deal of time outdoors are at greater risk of exposure to tularemia.

### ***Laboratory Criteria for Confirmation for Surveillance Purposes***

#### *Confirmatory*

- Isolation of *F. tularensis* from a clinical specimen, ***or***
- Fourfold or greater change in serum antibody titer to *F. tularensis* antigen

#### *Presumptive*

- Elevated serum antibody titer(s) to *F. tularensis* antigen (without documented fourfold or greater change) in a patient with no history of tularemia vaccination ***or***
- Detection of *F. tularensis* in a clinical specimen by fluorescent assay

### ***Surveillance Case Definition***

- *Confirmed*: a clinically compatible illness that is laboratory confirmed
- *Probable*: a clinically compatible case with laboratory results indicative of presumptive infection

Forty-eight cases of Tularemia were reported in Kansas for the ten year period 1990-1999; 3-10 cases were reported annually. In 1999, two cases of tularemia were reported.

In the U.S.A., tularemia occurs in all months of the year; incidence may be higher in adults in early winter during rabbit hunting season and in children during the summer when ticks and deer flies are abundant. Tularemia is not a nationally notifiable disease.

The graph displays the incidence of cases per 100,000 for two entities: Kansas and the United States (U.S.) from 1983 to 1999. The Y-axis represents the rate, ranging from 0 to 0.6. The X-axis represents the year. Kansas is represented by a solid line with circular markers, and the U.S. is represented by a solid line with plus-sign markers. Kansas shows high variability, with a notable peak in 1995. The U.S. shows a more stable but generally declining trend over the period.

Year	Kansas	U.S.
1983	0.50	0.13
1984	0.20	0.11
1985	0.30	0.07
1986	0.30	0.07
1987	0.30	0.09
1988	0.30	0.08
1989	0.20	0.06
1990	0.30	0.06
1991	0.20	0.08
1992	0.10	0.06
1993	0.10	0.04
1994	0.30	0.04
1995	0.40	0.04
1996	0.12	0.04
1997	0.16	0.04
1998	0.15	0.04
1999	0.08	0.04

Cases

0

1

2

## TYPHOID FEVER

---

Typhoid fever is an illness caused by *Salmonella typhi* that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough. However, many mild and atypical infections occur. Carriage of *S. typhi* may be prolonged. The incubation period depends on the size of the infecting dose; from 3 days to 3 months with a usual range of 1-3 weeks; for paratyphoid gastroenteritis, 1-10 days. Transmission is through food and water contaminated by feces and urine of patients and carriers. A vaccine is available but is generally reserved for people traveling to underdeveloped countries where significant exposure may occur. Strict attention to food and water precautions while traveling to such countries is the most effective preventive method.

### *Laboratory Criteria for Confirmation*

- Isolation of *S. typhi* from blood, stool, or other clinical specimen.

### *Surveillance Case Definition*

- *Confirmed*: a clinically compatible case that is laboratory confirmed
- *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case in an outbreak

### *Comment*

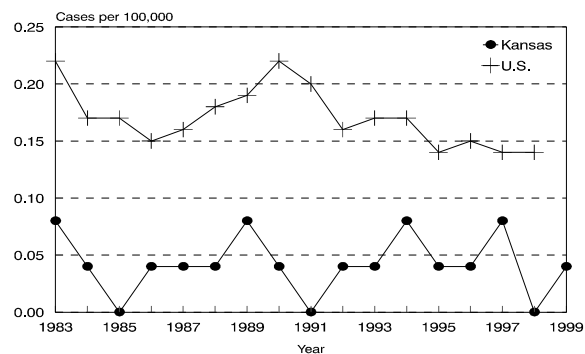
- Isolation of the organism is required for confirmation. Serologic evidence alone is not sufficient for diagnosis. Asymptomatic carriage should *not* be reported as typhoid fever. Isolates of *S. typhi* are sent to the Kansas Health and Environmental Laboratory.
- K.A.R. 28-1-6 requires that infected persons shall be restricted from food handling, patient care, or occupations involving the care of young children and the elderly until three negative stool cultures, and urine cultures in patients with schistosomiasis, have been obtained. Both the second and the third specimens shall be collected at least 24 hours after the prior specimen. The first specimen shall be collected no sooner than 48 hours following the discontinuation of antibiotics, and not earlier than one month after onset. If any one of these tests is positive, cultures shall be repeated monthly until three consecutive negative cultures are obtained.

### *Epidemiology and Trends*

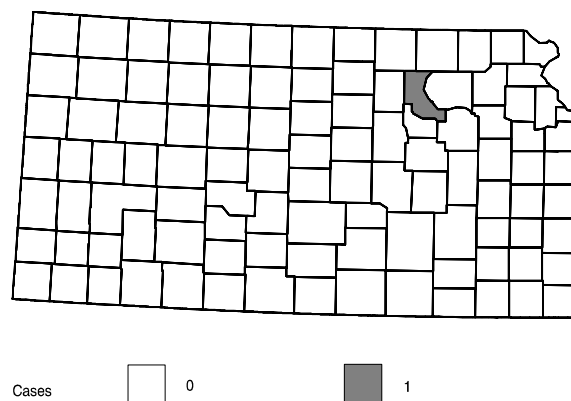
<i>1999 Case Total</i>	1
Kansas rate	<0.1 per 100,000
U.S. rate (1998)	0.1 per 100,000

Ten cases of typhoid fever were reported in Kansas for the ten year period 1990-1999; 1-2 cases were reported annually. There was one case of typhoid fever reported in 1999. The case was acquired outside of the U.S.

Typhoid fever incidence rate by year of report  
Kansas, 1983-1999



Typhoid fever cases by county  
Kansas, 1999





**The following diseases are reportable, but had no cases reported in 1999.**

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<b>Disease</b>	<b>Year last case reported</b>
• Anthrax	1972
• Botulism	1996
• Brucellosis	1996
• Chancroid	1998
• Cholera	1988
• Diphtheria	1964
• Legionellosis	1998
• Measles	1996
• Plague	Unknown
• Poliomyelitis	1967
• Psittacosis	1992
• Rabies, human	1968
• Rubella	1998
• Yellow fever	Unknown

## **SECTION II**

### **TABLES**

**TABLE 1. LIST OF REPORTABLE DISEASES IN KANSAS, 1999****Reportable by health care providers, hospitals, and laboratories**

(K.A.R. 65-118, 65-128, 65-6001 through 65-6007, K.A.R. 28-1-2, 28-1-4, 28-1-18)

- Acquired Immune Deficiency Syndrome (AIDS)
- Amebiasis
- **Anthrax**
- **Botulism**
- Brucellosis
- Campylobacter infections
- Chancroid
- Chlamydia trachomatis infection
- **Cholera**
- Cryptosporidiosis
- **Diphtheria**
- Encephalitis, infectious (indicate infectious agent whenever possible)
- *Escherichia coli* O157:H7 (including hemolytic uremia syndrome) (\*)
- Giardiasis
- Gonorrhea
- *Haemophilus influenzae*, invasive disease
- Hepatitis, viral and acute
- Hepatitis B, perinatal infection
- Hepatitis B infection in pregnant woman
- Hantavirus pulmonary syndrome
- Human Immunodeficiency Virus (HIV)
- Legionellosis
- Leprosy (Hansen's disease)
- Lyme disease
- Malaria
- **Measles (rubeola)**
- **Meningitis, bacterial**
- **Meningococcemia** (\*)
- **Mumps**
- **Pertussis (whooping cough)**
- **Plague**
- **Poliomyelitis**
- Psittacosis
- **Rabies, human and animal**
- Rocky Mountain Spotted Fever
- **Rubella**, including congenital rubella syndrome
- Salmonellosis, including typhoid fever (\*)

- Shigellosis (\*)
- *Streptococcus pneumoniae*, drug-resistant invasive disease
- Syphilis, including congenital syphilis
- Tetanus
- Toxic shock syndrome, streptococcal and staphylococcal
- Trichinosis
- Tuberculosis (\*)
- Tularemia
- Yellow Fever

### **Outbreaks of any disease are reportable.**

**(\*) Send isolate to the Kansas Health and Environmental Laboratory.**

Division of Health and Environmental Laboratories  
 Kansas Department of Health and Environment  
 Forbes Field, Building #740  
 Topeka, Kansas 66620-0001  
 Tel: (785) 296-1620

***Bold*** -- Immediate telephone report of *suspect or confirmed* cases required to health department.

### **Disease Reporting and Public Health Emergencies:**

- Toll-Free Phone 1-877-427-7317
- Toll-Free Fax 1-877-427-7318

**Additional conditions reportable by laboratories** (K.A.R. 28-1-18 effective August 16, 1993 and 28-1-22 effective December 24, 1990)

- Blood lead level  $\geq 10$   $\mu\text{g/dL}$  for persons  $< 18$  years of age, and  $\geq 25$   $\mu\text{g/dL}$  for persons  $\geq 18$  years of age.
- CD4+ T-lymphocyte count of less than 200/ml or a CD4+ T-lymphocyte percent of total lymphocytes less than 14.

**Additional conditions reportable by hospitals** (K.A.R. 28-1-4 effective May 1, 1986 and 28-1-22 effective December 24, 1990)

- Cancer
- Congenital malformations in infants under one year of age
- Fetal alcohol syndrome

**TABLE 2. COUNTY ABBREVIATIONS**

AL	Allen	JA	Jackson	SA	Saline
AN	Anderson	JF	Jefferson	SC	Scott
AT	Atchison	JW	Jewell	SG	Sedgwick
BA	Barber	JO	Johnson	SW	Seward
BT	Barton	KE	Kearny	SN	Shawnee
BB	Bourbon	KM	Kingman	SD	Sheridan
BR	Brown	KW	Kiowa	SH	Sherman
BU	Butler	LB	Labette	SM	Smith
CS	Chase	LE	Lane	SF	Stafford
CQ	Chatauqua	LV	Leavenworth	ST	Stanton
CK	Cherokee	LC	Lincoln	SV	Stevens
CN	Cheyenne	LN	Linn	SU	Sumner
CA	Clark	LG	Logan	TH	Thomas
CY	Clay	LY	Lyon	TR	Trego
CD	Cloud	MN	Marion	WB	Wabaunsee
CF	Coffey	MS	Marshall	WA	Wallace
CM	Comanche	MP	McPherson	WS	Washington
CL	Cowley	ME	Meade	WH	Wichita
CR	Crawford	MI	Miami	WL	Wilson
DC	Decatur	MC	Mitchell	WO	Woodson
DK	Dickinson	MG	Montgomery	WY	Wyandotte
DP	Doniphan	MR	Morris		
DG	Douglas	MT	Morton		
ED	Edwards	NM	Nemaha		
EK	Elk	NO	Neosho		
EL	Ellis	NS	Ness		
EW	Ellsworth	NT	Norton		
FI	Finney	OS	Osage		
FO	Ford	OB	Osborne		
FR	Franklin	OT	Ottawa		
GE	Geary	PN	Pawnee		
GO	Gove	PL	Phillips		
GH	Graham	PT	Pottawatomie		
GT	Grant	PR	Pratt		
GY	Gray	RA	Rawlins		
GL	Greeley	RN	Reno		
GW	Greenwood	RP	Republic		
HM	Hamilton	RC	Rice		
HP	Harper	RL	Riley		
HV	Harvey	RO	Rooks		
HS	Haskell	RH	Rush		
HG	Hodgeman	RS	Russell		

TABLE 3. MAP OF KANSAS

CHEYENNE	RAWLINS	DECATUR	NORTON	PHILLIPS	SMITH	JEWELL	REPUBLIC	WASHINGTON	MARSHALL	NEMAH	BROWN	DONIPHAN
SHERMAN	THOMAS	SHERIDAN	GRAHAM	ROOKS	OSBORNE	MITCHELL	CLOUD	CLAY	RILEY	POTTAWA-TOMIE	JACKSON	ATCHISON
WALLACE	LOGAN	GOVE	TREGO	ELLIS	RUSSELL	LINCOLN	OTTAWA	DICKINSON	GEARY	WABALNSEE	SHAWNEE	JEFFERSON
GREELEY	WICHITA	SCOTT	LANE	NESS	RUSH	BARTON	ELLSWORTH	SALINE	MORRIS	LYON	OSAGE	DOUGLAS
HAMILTON	KEARNY	FINNEY	HODGEMAN	PAWNEE	RICE	MCPHERSON	MARION	CHASE	COFFEY	ANDERSON	MIAMI	LEAVENWORTH
STANTON	GRANT	HASKELL	GRAY	EDWARDS	RENO	HARVEY	SEDGWICK	BUTLER	GREENWOOD	WOODSON	ALLEN	JOHNSON
MORTON	STEVENS	SEWARD	MEADE	CLARK	KIOWA	PRATT	KINGMAN	SUMNER	ELK	WILSON	NEOSHO	WYANDOTTE
				COMANCHE	BARBER	HARPER	COWLEY	CHAUTAUQUA	MONTGOMERY	LABETTE	CHEROKEE	

**TABLE 4. CASES OF REPORTABLE DISEASES BY YEAR IN KANSAS, 1990-1999**

DISEASE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
AIDS	134	93	188	358	227	286	135	145	87	127
AMEBIASIS	4	1	1	22	15	2	8	9	5	9
ANTHRAX	0	0	0	0	0	0	0	0	0	0
BOTULISM, FOODBORNE	0	0	0	0	0	1	0	0	0	0
BOTULISM, INFANT	0	0	1	0	2	0	1	0	0	0
BOTULISM, OTHER	0	1	0	0	0	0	0	0	0	0
BRUCELLOSIS	1	0	0	0	0	0	1	0	0	0
CAMPYLOBACTERIOSIS	185	200	253	201	247	238	208	200	351	290
CHANCROID	13	5	3	1	5	2	2	0	1	0
CHLAMYDIA	5218	6791	7024	5694	6393	5315	4448	4698	5446	6093
CHOLERA	0	0	0	0	0	0	0	0	0	0
CRYPTOSPORIDIOSIS	-	-	-	-	1	31	11	14	11	2
DIPHTHERIA	0	0	0	0	0	0	0	0	0	0
<i>E. coli</i> O157:H7	2	4	4	11	25	29	33	30	39	31
ENCEPHALITIS, INFECTIOUS	13	5	5	7	7	11	2	2	1	1
ENCEPHALITIS, SLE	0	0	0	0	0	0	0	0	0	0
ENCEPHALITIS, WEE	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	380	309	521	385	415	395	237	230	226	220
GONORRHEA	4673	4637	4404	3710	3682	2797	2043	2094	2574	2665
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	1
HANTAVIRUS PULM. SYN.	-	-	-	1	4	0	2	2	2	2

**TABLE 4. CASES OF REPORTABLE DISEASES BY YEAR IN KANSAS, 1990-1999**

DISEASE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
HEPATITIS A	271	89	141	79	111	162	393	262	109	66
HEPATITIS B	139	56	66	65	31	53	32	32	28	17
HEP, C/NON-A NON-B	40	20	16	16	18	18	16	13	2	1
LEAD $\geq 10$ $\mu$ g/dL	-	-	-	545	1034	1202	1171	779	886	770
LEGIONELLOSIS	9	4	5	7	6	8	6	7	11	0
LYME DISEASE	21	22	18	55	17	23	36	4	11	16
MALARIA	6	8	6	3	7	3	7	4	10	5
MEASLES	233	13	1	2	1	1	1	0	0	0
MENINGITIS, HIB	31	19	12	4	3	2	3	0	1	2
MENINGITIS, OTHER	33	35	21	26	42	9	18	52	25	28
MENINGOCOCCAL DISEASE	22	26	17	36	28	28	27	26	37	23
MUMPS	91	31	3	1	1	0	2	1	2	3
PERTUSSIS	27	12	34	24	18	23	14	33	71	49
PLAGUE	0	0	0	0	0	0	0	0	0	0
POLIOMYELITIS	-	-	0	0	0	0	0	0	0	0
PSITTACOSIS	1	0	1	0	0	0	0	0	0	0
RABIES, ANIMAL	45	63	374	79	35	46	37	89	99	107
RABIES, HUMAN	0	0	0	0	0	0	0	0	0	0
RMSF	18	6	5	1	4	4	2	7	3	2
RUBELLA	0	1	4	0	0	1	0	0	36	0



**TABLE 4. CASES OF REPORTABLE DISEASES BY YEAR IN KANSAS, 1990-1999**

DISEASE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
RUBELLA, CONGENITAL	0	0	1	0	0	0	0	0	0	0
SALMONELLOSIS	295	245	304	299	397	363	419	446	363	333
SHIGELLOSIS	135	79	266	208	123	302	112	133	82	89
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	1	6	9
SYPHILIS, P AND S	87	201	203	129	74	47	28	32	12	14
SYPHILIS, CONGENITAL	2	0	2	3	2	2	0	0	0	0
SYPHILIS, ALL STAGES	177	373	356	282	188	147	136	174	106	95
TETANUS	0	0	0	2	1	2	0	0	0	1
TOXIC SHOCK SYNDROME	11	8	9	3	5	2	5	1	14	11
TRICHINOSIS	6	0	0	0	0	0	0	0	0	1
TUBERCULOSIS	78	62	56	83	84	89	73	78	56	69
TULAREMIA	7	5	3	3	7	10	3	4	4	2
TYPHOID FEVER	1	0	1	1	2	1	1	2	0	1
TYPHUS	0	0	0	0	0	0	0	0	0	0
YELLOW FEVER	0	0	0	0	0	0	0	0	0	0
YERSINIOSIS ◇	-	-	3	1	2	2	1	0	-	-

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

**TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	AL	AN	AT	BA	BB	BR	BT	BU	CA	CD	CF	CK	CL	CM	CN
AIDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAMPYLOBACTERIOSIS	0	1	3	1	2	2	2	5	2	1	1	1	2	0	2
CHLAMYDIA	22	7	21	4	33	16	74	76	0	12	5	20	81	0	0
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>E. coli</i> O157:H7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	1	0	8	0	4	1	0	7	0	4	0	0	7	0	0
GONORRHEA	1	1	3	0	3	2	20	10	0	1	1	2	19	0	0
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS A	0	0	0	1	5	0	1	0	0	0	1	0	0	0	0
HEPATITIS B,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEAD ≥ 10 µg/dL	4	1	16	0	21	5	4	3	0	1	3	15	27	2	1
LYME DISEASE	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
MENINGOCOCCAL DISEASE	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERTUSSIS	11	1	0	0	1	0	0	0	0	0	0	0	0	0	0
RABIES, ANIMAL	5	1	0	0	0	1	3	9	0	0	1	0	1	0	0
RMSF	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
SALMONELLOSIS	2	1	2	0	5	1	3	5	0	0	0	4	5	0	2
SHIGELLOSIS	0	0	0	0	1	0	0	0	0	0	0	18	0	0	0
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, ALL STAGES	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUBERCULOSIS	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999

	CQ	CR	CS	CY	DC	DG	DK	DP	ED	EK	EL	EW	FI	FO	FR
AIDS	0	*	0	0	0	8	*	0	0	0	0	*	0	*	*
AMEBIASIS	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
CAMPYLOBACTERIOSIS	1	3	0	1	1	8	2	1	0	1	4	1	6	1	1
CHLAMYDIA	0	76	1	8	1	261	17	10	4	0	92	9	112	105	31
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>E. coli</i> O157:H7	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	0	6	2	0	0	5	0	1	0	0	1	0	3	3	0
GONORRHEA	0	15	0	0	1	75	2	3	0	0	9	3	23	21	3
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HEPATITIS A	0	2	0	0	0	2	1	0	0	0	0	0	2	2	0
HEPATITIS B	0	0	0	0	0	5	0	0	0	0	0	0	1	0	1
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEAD $\geq$ 10 $\mu$ g/dL	4	18	0	3	0	8	8	4	2	2	22	0	1	15	10
LYME DISEASE	0	0	0	0	0	3	0	0	0	1	0	0	0	0	1
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
MENINGITIS, BACTERIAL	0	1	0	0	0	3	0	1	0	0	0	0	0	0	1
MENINGOCOCCAL DISEASE	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERTUSSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RABIES, ANIMAL	1	6	0	0	0	2	1	0	0	1	0	0	0	0	0
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	0	5	0	0	0	9	1	1	0	0	4	0	6	7	3
SHIGELLOSIS	0	0	0	0	0	1	1	0	0	0	1	0	4	7	0
STREP. PNEU., DR-INV	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
SYPHILIS, ALL STAGES	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUBERCULOSIS	0	0	0	0	0	0	0	0	0	0	0	0	7	2	0
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

**TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	GE	GH	GL	GO	GT	GW	GY	HG	HM	HP	HS	HV	JA	JF	JO
AIDS	*	*	0	0	0	0	0	0	0	0	0	*	0	0	17
AMEBIASIS	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
CAMPYLOBACTERIOSIS	0	1	1	0	1	0	0	0	0	0	2	7	1	3	48
CHLAMYDIA	331	2	1	2	19	1	5	0	5	4	1	47	9	12	417
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>E. coli</i> O157:H7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	9
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
GIARDIASIS	0	0	0	0	0	1	0	0	1	1	0	1	1	0	49
GONORRHEA	164	0	1	0	0	0	1	0	1	0	0	9	0	1	124
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS A	1	0	0	0	2	0	0	0	0	0	0	0	0	0	23
HEPATITIS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
LEAD ≥ 10 µg/dL	8	0	2	0	2	0	0	0	0	2	0	0	10	0	14
LYME DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
MENINGOCOCCAL DISEASE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PERTUSSIS	0	0	0	0	0	1	0	0	0	1	0	0	0	0	15
RABIES, ANIMAL	0	1	0	0	0	3	0	0	0	0	0	6	0	1	0
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	3	3	0	0	3	0	1	6	1	0	3	1	1	10	53
SHIGELLOSIS	0	0	2	0	0	0	0	0	0	1	2	0	0	1	9
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
SYPHILIS, ALL STAGES	3	0	0	0	0	0	0	0	0	0	0	0	0	0	11
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUBERCULOSIS	0	1	0	0	1	0	0	0	0	0	0	0	0	0	5
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

98 **TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	JW	KE	KM	KW	LB	LC	LE	LG	LN	LV	LY	MC	ME	MG	MI
AIDS	0	0	0	0	*	0	0	0	0	5	*	0	0	0	0
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAMPYLOBACTERIOSIS	0	3	4	0	1	0	0	1	1	7	4	0	2	0	7
CHLAMYDIA	0	4	3	2	38	4	1	0	8	107	75	12	2	50	21
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>E. coli</i> O157:H7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	0	0	0	0	2	0	0	0	1	5	4	0	0	0	6
GONORRHEA	0	2	1	0	14	2	0	0	0	51	13	5	0	28	4
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS A	0	1	0	0	3	0	0	0	0	1	1	0	0	1	0
HEPATITIS B	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEAD $\geq$ 10 $\mu$ g/dL	0	0	0	3	15	0	0	0	2	18	11	6	0	26	3
LYME DISEASE	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1
MENINGOCOCCAL DISEASE	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERTUSSIS	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
RABIES, ANIMAL	0	0	2	0	0	0	0	0	0	0	7	0	0	0	0
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	0	1	1	2	0	0	0	0	0	4	4	0	1	2	4
SHIGELLOSIS	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, ALL STAGES	0	0	1	0	0	0	0	0	0	7	3	0	0	1	0
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUBERCULOSIS	0	0	0	0	0	0	0	0	0	3	1	0	3	1	1
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

**TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	MN	MP	MR	MS	MT	NM	NO	NS	NT	OB	OS	OT	PL	PN	PR
AIDS	0	0	0	*	0	0	0	0	0	0	*	0	0	0	0
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAMPYLOBACTERIOSIS	3	4	1	0	1	2	1	0	0	0	0	0	0	1	2
CHLAMYDIA	8	26	2	3	0	5	19	0	4	1	6	5	3	13	9
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>E. coli</i> O157:H7	2	0	0	0	0	0	0	1	0	0	0	0	0	0	1
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	1	3	0	1	0	1	3	0	0	0	1	1	0	1	0
GONORRHEA	0	2	0	0	0	0	1	0	3	0	1	0	0	1	2
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS B	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS, C/NON-A NON-B	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEAD ≥ 10 µg/dL	0	2	0	0	0	1	14	1	1	0	0	1	2	3	2
LYME DISEASE	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MENINGITIS, BACTERIAL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERTUSSIS	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
RABIES, ANIMAL	5	0	0	0	0	1	0	0	0	0	0	0	0	1	0
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	0	6	0	2	2	1	1	1	0	0	0	1	1	0	4
SHIGELLOSIS	0	0	0	0	0	0	0	0	4	0	0	0	0	0	10
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYPHILIS, ALL STAGES	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUBERCULOSIS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

100 **TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	PT	RA	RC	RH	RL	RN	RO	RP	RS	SA	SC	SD	SF	SG	SH
AIDS	0	0	0	0	*	0	0	0	0	*	0	0	*	45	0
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAMPYLOBACTERIOSIS	3	2	1	2	3	10	2	0	3	9	2	1	3	42	0
CHLAMYDIA	11	0	8	1	180	123	5	1	9	96	4	1	3	1599	5
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>E. coli</i> O157:H7	0	0	0	0	1	0	0	0	0	0	0	0	1	1	2
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	1	0	0	0	4	15	0	0	0	7	0	0	0	33	2
GONORRHEA	1	0	3	0	36	33	0	0	0	25	2	0	0	784	0
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HANTAVIRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS A	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0
HEPATITIS B	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEAD $\geq$ 10 $\mu$ g/dL	4	0	0	1	3	30	1	0	0	61	1	1	0	118	2
LYME DISEASE	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MENINGITIS, BACTERIAL	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
PERTUSSIS	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0
RABIES, ANIMAL	18	0	5	0	3	2	0	1	0	0	0	0	0	6	0
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	4	0	0	0	5	5	1	0	1	12	1	0	0	53	2
SHIGELLOSIS	0	0	0	0	2	2	0	0	0	0	0	0	1	11	0
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
SYPHILIS, ALL STAGES	0	0	1	0	1	1	0	0	0	1	0	0	0	34	0
TETANUS	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
TOXIC SHOCK SYNDROME	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
TUBERCULOSIS	0	0	0	0	1	2	0	0	0	2	0	0	0	26	0
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
TYPHOID FEVER	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.

**TABLE 5. CASES OF REPORTABLE DISEASES BY COUNTY IN KANSAS, 1999**

	SM	SN	ST	SU	SV	SW	TH	TR	WA	WB	WH	WL	WO	WS	WY	TOTAL
AIDS	0	*	0	*	0	*	0	0	0	0	0	0	0	0	25	126
AMEBIASIS	0	0	0	0	3	1	0	0	0	0	0	0	0	0	1	9
CAMPYLOBACTERIOSIS	0	22	0	1	0	0	1	0	0	1	0	3	0	3	11	290
CHLAMYDIA	2	499	1	30	9	35	20	8	1	2	5	11	1	1	1037	6093
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>E. coli</i> O157:H7	0	2	0	0	0	1	0	1	0	0	0	0	0	0	2	31
ENCEPHALITIS, INFECTIOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
GIARDIASIS	0	9	0	3	0	1	0	0	0	0	0	2	0	1	5	220
GONORRHEA	0	247	1	2	3	8	2	1	0	0	0	1	0	0	867	2665
<i>H. influenzae</i> , INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8
HANSEN'S DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
HANTAVIRUS	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
HEPATITIS A	0	1	1	0	0	0	0	0	0	0	1	0	0	0	7	66
HEPATITIS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
HEPATITIS, C/NON-A NON-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
LEAD ≥ 10 µg/dL	1	83	0	13	0	2	0	3	1	1	2	5	6	2	78	768
LYME DISEASE	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	16
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
MENINGITIS, BACTERIAL	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	28
MENINGOCOCCAL DISEASE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	23
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
PERTUSSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	49
RABIES, ANIMAL	0	0	0	3	0	0	0	0	0	6	0	2	2	0	0	107
RMSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
SALMONELLOSIS	1	25	1	3	1	2	2	1	0	2	0	0	0	0	22	333
SHIGELLOSIS	0	4	0	0	0	3	0	0	0	0	0	0	0	0	1	89
STREP. PNEU., DR-INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9
SYPHILIS, P AND S	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	14
SYPHILIS, ALL STAGES	0	8	0	0	0	3	0	0	0	0	0	0	0	0	6	95
TETANUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
TRICHINOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TUBERCULOSIS	0	1	0	1	0	2	0	0	0	0	0	0	0	0	4	69
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TYPHOID FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

◇ Not reportable disease in 1999, but historical data provided. This disease is reportable in 2000.



# **TABLE 6. PUBLICATIONS ON DISEASE CONTROL IN KANSAS, 1999**

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